

FEBRUARY 1916

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AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

Second Annual

FARM BUILDING NUMBER

*These Model Farm Buildings
Fully Detailed in this Issue*

Price 20 Cents

This is the Saw They Are Talking About

The lovers of fine tools, who investigate the latest labor saving devices are enthusiastic over

ATKINS SAWS

A Perfect Saw for Every Purpose

Their use means more work in a day with less effort.

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E. C. ATKINS & CO., Inc., Indianapolis, Ind.

Builders Side With Those Who Are Creating Building Business

A SHORT TALK WITH OUR SUBSCRIBERS

YOU'VE got to hand it to the manufacturers of building materials for what they are doing to interest the general public in building improvements.

We must give the manufacturers credit for the constructive, educational advertising they are doing.

Entire industries of very sizable proportions have sprung into being thru the launching into the building field of a new idea by some manufacturer possessing nerve and vision.

The entire range of what we call *modern construction* testifies to this. There wasn't much to the old-fashioned house or barn; nothing that could be advertised; nothing that could be played up to thrill the imagination and the ambition of the property owner. A house was just a house, and a barn was just a barn.

But that was before the day of *modern improvements*. These modern improvements—such as sanitary cow stable fittings, sheet metal roof ventilators, trolley track carriers for litter and feed, improved water supply system, efficient home lighting plant, modern bathroom appointments, etc.—all of these are the *talking points* that lead to building.

Credit to Whom Credit is Due

We sometimes wonder if the manufacturers of building materials and building specialties are given the credit they deserve for the work they have done in developing American building to its present perfection. Who was it that made it commercially possible to build higher than four stories?—to whom should we give first credit for the modern skyscraper? In fairness, the answer

is, to the engineering department of the elevator manufacturing concern that first solved the mechanical difficulties of safe, rapid, vertical transportation.

In the same way, in hundreds of other branches of the building industry, high salaried experts are experimenting and planning and figuring to work out real improvements.

We should give them credit.

Also, the advertising departments of these same concerns are taking the results of these engineering labors, and are popularizing them, making them well known and their value thoroly appreciated by the general public. These improved materials and features of construction and finish create the desire for home-ownership; for fixing over the old barn; for building and operating a modern business block.

And presently this desire, this seed planted by the manufacturer who advertises, springs up and bears fruit; plans are drawn, the contract let, and the work done. We must give credit for this building activity to the manufacturer who advertises. Common gratitude or business honesty will urge builders to line up with these enterprising concerns, and help along their work in every way possible. Selfish interests also urge the builder in the same direction.

Instructive Advertising

Just notice the sort of advertising that appears in this issue of the *AMERICAN CARPENTER AND BUILDER*. More than 350 enterprising concerns are spending good money to invite you, thru your own paper, to co-operate with them.

Just notice how many of these advertisements are really instructive for you and for your prospective customers and clients. A number of them present instructive details that deserve careful study—they are the best efforts of specialists in these particular lines. Notice how many invite you to send for instructive, illustrated hand books and catalogs.

We want to urge every one of our readers to get in line with the work these advertisers are striving to accomplish. It all means more building business and better building business for you.

Blueprints can be Furnished

We feel just a little bit chesty about the illustrations, plans and details for the set of ten model farm buildings illustrated in this issue. These were all produced in our own Architectural Department, so we know they are right. If any one desires fuller information than we have been able to publish concerning any one of these designs, complete blueprinted working plans and specifications will be furnished at a nominal charge.

Next Month, "Home Builders' Number"

The March *AMERICAN CARPENTER AND BUILDER* will be just as good (and we hope better) than this month's magazine, tho of an entirely different sort. A thousand and one good ideas and plans for home builders about modern residence work will be the feature next month. Yours for business,

Editor *AMERICAN CARPENTER AND BUILDER*.

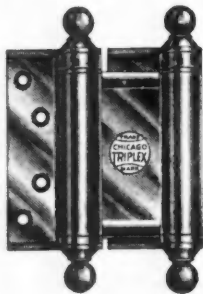
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SPRING HINGES A SUGGESTION

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



Chicago "Triplex" Spring Butts

offer this advantage to you. The appearance, durability and finish of this article are unsurpassed, and in consideration of prices that are conservative in respect to value, the up-to-date builder cannot afford to risk his reputation for goods that are unsatisfactory.

Send for Catalogue C 32. It illustrates and describes the most complete line of Spring Hinges manufactured.

Chicago Spring Butt Company,

CHICAGO

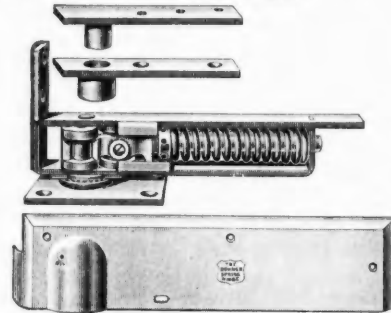


NEW YORK

BOMMER

Floor Surface Spring Hinge For Double-Acting and Single-Acting Doors Release and Holdback Ball Bearing Alignment Device

Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side. The spring-action can also be entirely released as long as desired so that the door will swing free, without spring-action, in either direction, by inserting a wire nail (when the door is open) into a hole provided in the side plates for that purpose. The spring-action can be restored by withdrawing the nail.

Your Hardware Merchant Can Supply Them

Bommer Bros., Manufacturers Brooklyn, N.Y.



A Bungalow for Permanent Occupancy. Charles E. Anderson, designer, White Plains, N. Y. "The roof is covered with shingles dipped 10" in Cabot's Creosote Shingle Stains; the body is stained a rich brown with Cabot's Creosote Stain."

You Can Pick Out the houses that have been stained with Cabot's Creosote Shingle Stains

The colors are so soft and rich and lasting that all other stains look cheap and tawdry in comparison. They go farther, last longer, preserve the wood better and are vastly more artistic—and every gallon is guaranteed. Imitation stains smell of kerosene or benzine and are dangerously inflammable. Cabot's Stains are the genuine Creosote, wood-preserving stains, and they make the wood less inflammable.

CABOT'S QUILT

A scientific heat insulator and sound-deadener that makes houses warmer in winter and cooler in summer and deadens sound in floors and partitions. Not a mere felt or paper, but non-conducting mat that is about thirty times warmer than common papers.

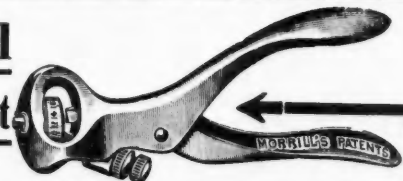
You can get Cabot's Stains and Quilt all over the country. Send for samples and names of nearest agents.

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Morrill Saw Set

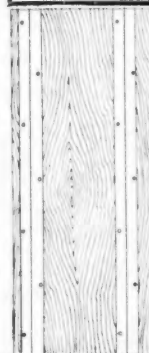


All master carpenters are using this Saw Set. In one operation it takes out the wrong set and puts in the right one. Write for FREE booklet "Saw Points". It tells how to properly joint, set and file hand saws.

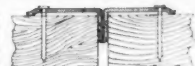
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94 Lafayette Street
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Make your buildings tight. Chief Galvanized Steel Strips fill the cracks between boards and make strong, neat, weather-proof joints. Keep out vermin. Cannot rot, warp or split like wooden batten. Always fit. Allow for contraction and expansion of boards without loosening nails. Furnished in 8 and 10 ft. lengths with interlocking joints. Write for full information.



Shows end view of Chief Batten with joint closed. Siding expanded. Note position of the batten in the crack.



Shows end view of Batten with the joint open and sliding contracted. Chief Battens automatically accommodate expansion and contraction.

SHRAUGER & JOHNSON
Walnut St., Atlantic, Ia.



Member of the Audit Bureau of Circulations
Circulation Audited and Verified February, 24, 1915

The
**World's Greatest
Building Paper**

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The
**World's Greatest
Building Paper**

American Carpenter and Builder

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The publishers of the American Carpenter and Builder will not knowingly accept advertising from any individual, firm or corporation that is misleading in any way. They also reserve the right to edit advertising copy and to change or eliminate any statements that reflect or cast discredit upon any other building products.

The American Carpenter and Builder Company will use every legitimate means to safeguard the interests of its readers and its advertisers. It will use every effort to protect them from concerns whose business methods are open to question. Where the slightest doubt exists write the publishers for complete information. It may save money, time and worry.

In all cases in writing to advertisers inquirers should say: "I saw your advertisement in the American Carpenter and Builder."

VOL. XX

FEBRUARY, 1916.

No. 5

Farm Building Improvements and the Rural Carpenter and Builder

TO build a barn is no longer the simple little job it used to be—stone foundation, a raising bee, roofing, and siding—and there she stands.

Life has grown more complex than that.

The farmer today requires more of a barn—and expects more of his builder who plans and erects it. The old-time knowledge of construction is expected—taken for granted—and then all the modern complex of choices, labor-saving equipment, sanitary construction, most economical arrangement, most satisfactory selection and use of barn building materials—all these are put up to the barn builder.

And he must *know* if he is to continue in business.

Just as the capitalist goes to the city architect and puts it up to him to plan a skyscraper that will be up-to-date and *right* from every angle, leaving all the details to him and holding him responsible for the successful outcome, just so the prosperous farmer today goes to the local carpenter and builder and requires

intelligent *expert* service at planning his barn improvements.

The rural builder is called upon to be the farmers' architect and adviser.

And the farmers today are requiring good buildings, thoroly equipped and up-to-date in every way. Where the old-time barn builder would call the job done—pack up his broad axe and auger, and go home—the barn builder and architect of the present day is just getting ready to begin the finer work of completing the barn.

We are enthusiasts for modern farm building improvements. We know the value of them to the farmer, to the fertility of his soil, to the builder, to the community in general.

We urge every one of our readers to join us in this enthusiasm. Post up on all the finer points of farm building work. You will find it immensely worth while.

We have gathered together and prepared for your benefit and inspiration this noteworthy mass of farm building material. Preserve it; show it to your farmer customers; refer to it constantly.—EDITOR.

GOODELL PRATT

1500 GOOD TOOLS

From our big catalog of 1500 Good Tools you are sure to learn of tools or improvements new to you and which will make your work easier, better and more profitable.

In the last few months we have added many good tools to the Goodell-Pratt line.

Did you ever own a tool branded "Goodell-Pratt" that wasn't satisfactory? The fineness of our tools is the result of a shop practice and a mechanical equipment far in advance of most machine shops. That is because we make many precision tools, such as micrometers and gauges. The exquisitely accurate work needed on those tools is the standard which holds throughout our shop. Our tools are more accurately machined and tempered than most tools you buy.

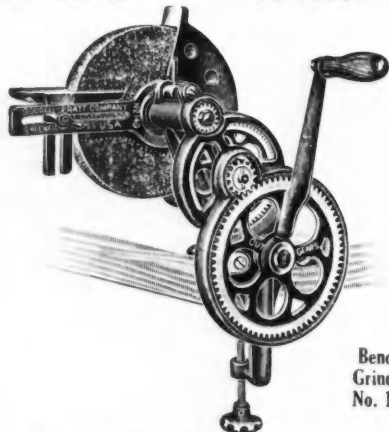
Send for our big free catalog.

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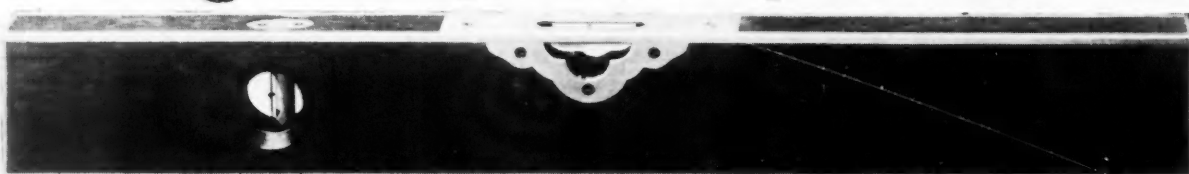
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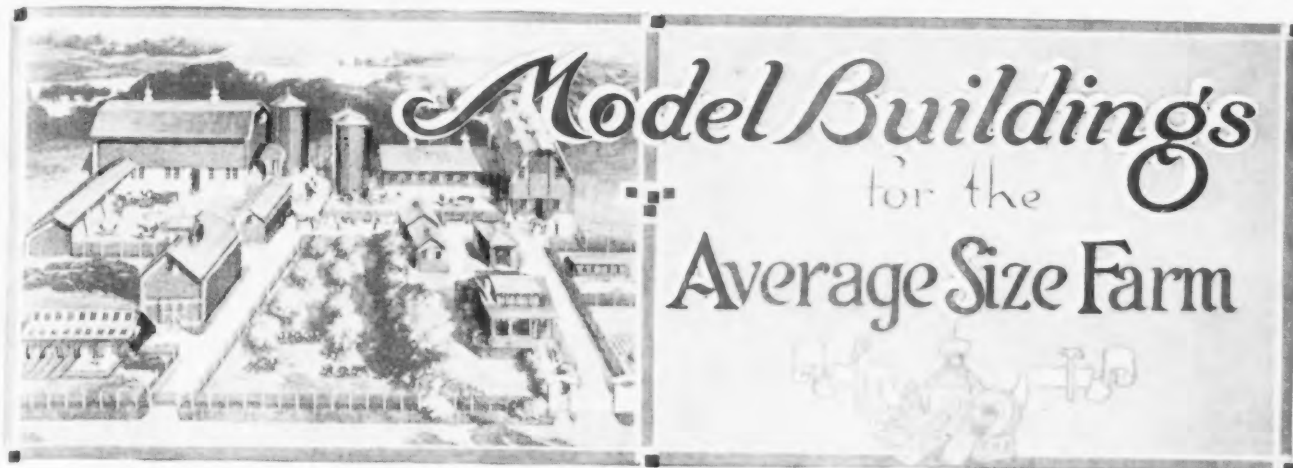


Automatic
Screw
Driver
No. 111



Breast
Drill
No. 6





How the Modern Principles of Barn Building Actually Work Out

By WM. A. RADFORD,

Editor Lumbermen's "Farm and Building Book," and Bankers' "Farm and Building Guide."

NOTE: We have planned these model farm buildings in our own Architectural Department, and so can guarantee all the details of construction and all the floor plan diagrams to be accurate and dependable.

The Perspective Views also were produced by our own draftsmen, photographers, and artists; and can be relied upon as showing the true outward appearance of each one of these ten farm buildings when completed.

The improved features worked into these buildings are not theoretical but practical. They are the very latest ideas approved by the best farmers and barn builders of the present day.

—EDITOR "AMERICAN CARPENTER AND BUILDER."

"I HAVE decided to get into live stock farming as the quickest and best way of building up my place; and so you see I will need to make a number of building improvements out at the old farm."

Jackson, the builder, nodded his approval. He was well acquainted with the Dale place, and had known Farmer Dale, the speaker, for fifteen years.

"I have been figuring it out," continued Dale, "that the only way to get the fertility back is to haul it back, and feed it out to hogs, steers and dairy cows. But before I can do that to any advantage, I must have proper buildings."

"Yes, that's a fact," his contractor friend rejoined. "I have noticed that live stock is the first aid to a rundown farm; and you can't keep live stock without buildings. You need up-to-date buildings; enough of them to house all of the live stock that your farm can profitably raise feed for."

"I want them well built, and I don't propose to keep my stock warm by feeding them an extra supply of corn at 75 cents a bushel, especially when to house them in a good snug stable is the cheaper and better way to do it. Also, as I will have the most of the work myself, I must have buildings

arranged to save steps, and equipped with all the labor-saving appliances you can recommend."

"What buildings will you need?" asked Jackson, interested at once.

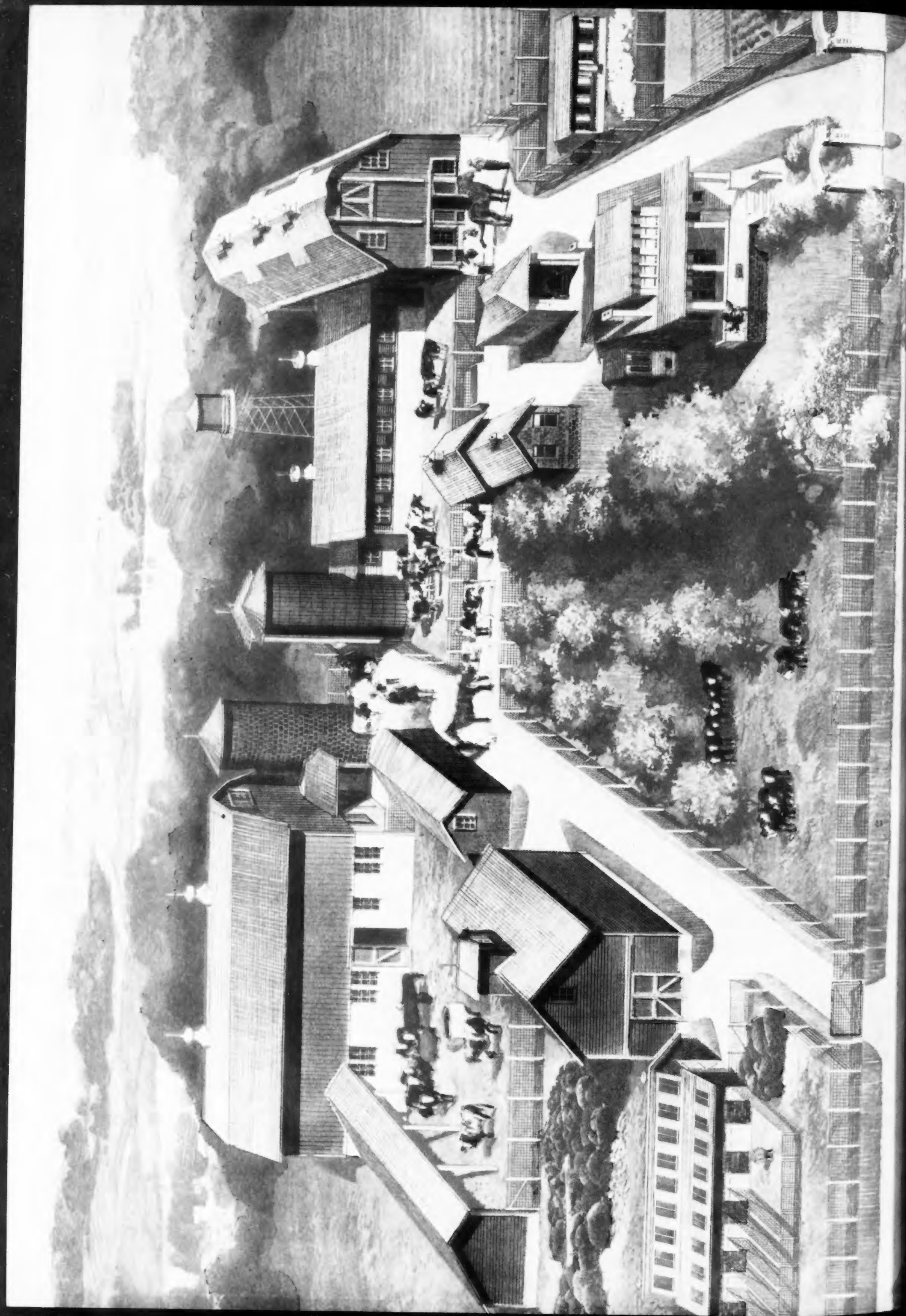
"Well, just about an entire outfit, I suppose; that's one thing I wanted your advice about. There is on the place one barn—a heavy timber frame—that can be remodeled into a good basement barn for beef cattle; but all the rest will have to be planned out and built new—horse barn, dairy stable, silos, corn crib and granary, winter hog house, implement shed, milk house and ice house, poultry house, garage, etc.; also a good modern farm house."

"What you want, then, is a definite plan to work to," suggested the builder. "Each building right individually, and also with relation to the others so that the whole group will be right."

"Mr. Dale, did you ever notice how many farmers are doing their chores by the mile instead of by the rod or yard?—all because their buildings were not planned out according to any system. It's a shame, and we barn builders are beginning to realize it. A good many of us now are studying this farm building proposition in a new light, and we are



Jackson, the Local Builder, and Farmer Dale Consult Together Concerning Plans and Equipment for a Group of Modern Farm Buildings.



"A. C. & B." Model Farm Buildings for the Average Size Farm

Model Buildings for the Average Size Farm

57

going to give our customers more intelligent service than ever before, more genuine interest in their business.”

“That’s right,” the farmer acquiesced. “Now take these buildings I am thinking of. Maybe we won’t be able to build them all this season, but we can have a

is ideal. All of the farm chores are laid out in short circuits from one building to the next, saving thousands of steps. Every element in this group is a practical building of just moderate size, such as appeals to the average prosperous farmer of today. In the more detailed views and construction plans of each one of these ten buildings presented in the succeeding pages every approved modern farm building idea is featured and fully explained.

This scene typifies the kind of work that barn builders and rural carpenters and builders are doing under AMERICAN CARPENTER AND BUILDER inspiration and guidance. They are planning and building practically all of the modern, well-equipped farm homes, barns and other farm buildings. And with such sales helps as this, our readers find that every farmer is a prospect for building improvements if he lacks any one of the ten modern types of farm buildings pictured here.

concrete basement barn providing warm and sanitary stock pens on the ground floor and big storage space above. A stock shed addition shelters the cattle yard along the west.

Next we come to the pig yard with its snug winter hog house of the approved saw-tooth roof type. Just back of the hog house and equally convenient to it and to cattle lot stands the big corn crib and granary. Note that this is a two-story building provided with built-in-place cup elevator for handling corn and other grain in the easiest way. The implement or farm machinery shed is the long, low building at the intersection of the cross driveway and the farm lane, a most convenient location. On the driveway near the dairy stable and also convenient to the farm house and to the calf pasture, stands the combined dairy house and ice house. Last, but not least, the poultry house stands just over the fence by the house back door.

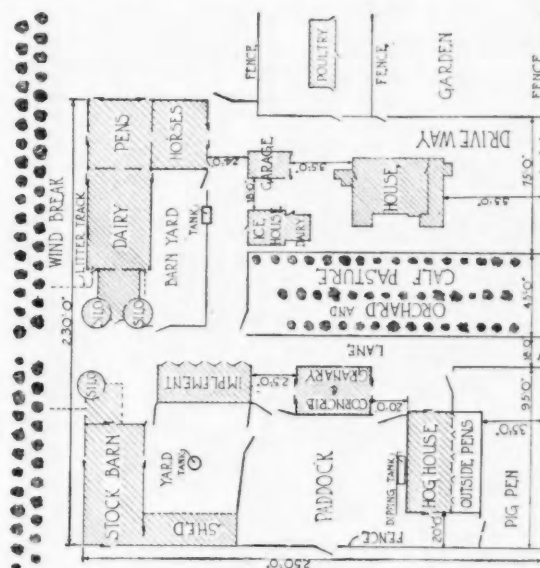
The grouping of these farm buildings

THIS set of farm buildings, illustrated on the opposite page, is right from every point of view—convenience of layout as a whole; practical efficiency of each building considered separately; buildings good looking, yet economical to put up; every approved modern idea included.

Beginning at the attractive front entrance we have a commodious nine-room farm house of the latest bungalow type and fitted with all modern conveniences. Directly back of it on the driveway is the combined garage and farm power house where the water supply and electric lighting outfits are installed. Just a step further on is the horse barn with one-story dairy stable addition, all as recommended by the foremost dairymen and builders. The horse stable part has a high gambrel roof, affording immense hay storage. The cattle are fed from the two big silos at the end of the cow stable. Stepping across the lane we enter the beef cattle barn, a gambrel roof,

buildings—yours is a 200-acre farm, isn’t it? We will aim to plan each building sensibly, making it as nearly a model of its kind as we can. So you see, any one of these buildings can be put up alone and used by itself to advantage; besides which we will group them in a way to save steps and make the best appearance. You are lucky in being able to plan for all of these buildings at once. I can save you some money that way, besides putting up a better job. Most farmers have to build one at a time; but even so, they ought to plan ahead so that all of their buildings will be properly grouped when the building program is completed.

“It’s better and safer to build a barn on paper first. Changes and mistakes are costly when a building is really under construction, but it is easy to make changes on paper. There are many chances for going wrong in planning a modern farm building. I have made quite a study of this, as you know; have a whole shelf there full of barn equipment handbooks and catalogs, besides all of the experiment station bulletins and other



Plot Plan and Key to Bird's-eye View of Model Farm Building Group on the Opposite Page.

books on form structures.

“As this is an undertaking, Mr. Dale, that will mean a good deal to you, suppose we give a few minutes to considering the principle factors in the designing and building of satisfactory modern farm buildings. Then when we are finished you can feel that you have planned wisely.

Five Fundamental Points

“There are five fundamental things to consider in the planning of any farm building: appearance, economy, practicability, convenience, and sanitation.

APPEARANCE:

“A well-designed, handsome appearing, practical building will add to the attractiveness of any farm, and make it worth more to any prospective purchaser. Correct designing has more to do with the appearance of the building than any other one thing; altho the exterior finish and relation of other buildings must be

definite plan to work to, and when we get to them we know that they will fit into their proper places without crowding, and without rods to spare of needless trudging and wasted space.”

Farm Buildings Planned in a Group

“Well, to begin,” said Contractor Jackson, reaching for his sketch pad, “you will want just average size

considered. A long roof may have properly proportioned dormer windows to break the monotony of the roof and add greatly to the appearance when the building is finished. The ventilators show off the building to good advantage, and give them a finished appearance.

"Common types of barns are round, square, rectangular, L-shaped and T-shaped. In roof styles we have gable, gothic, and gambrel roofs. The gambrel roof is the most widely used by the best barn builders as it is easy to brace, is inexpensive and gives immense hay storage space.

ECONOMY:

"To get least wall area; to get economy of floor space; to save building material; to save in cost of construction; to reduce heat lost thru walls—are all considerations of economy.

"Sometimes too little money is invested in farm buildings, in which case undue labor is required in taking care of the stock. Work is often done at a great disadvantage, to save a few dollars when the buildings are being constructed.*

*It will pay every builder well to study the different equipment that is used in farm building and the amount of labor that they will save every owner. This will help you to land all of the better farm building contracts. You should study the different methods of farm building framing.—Editor.

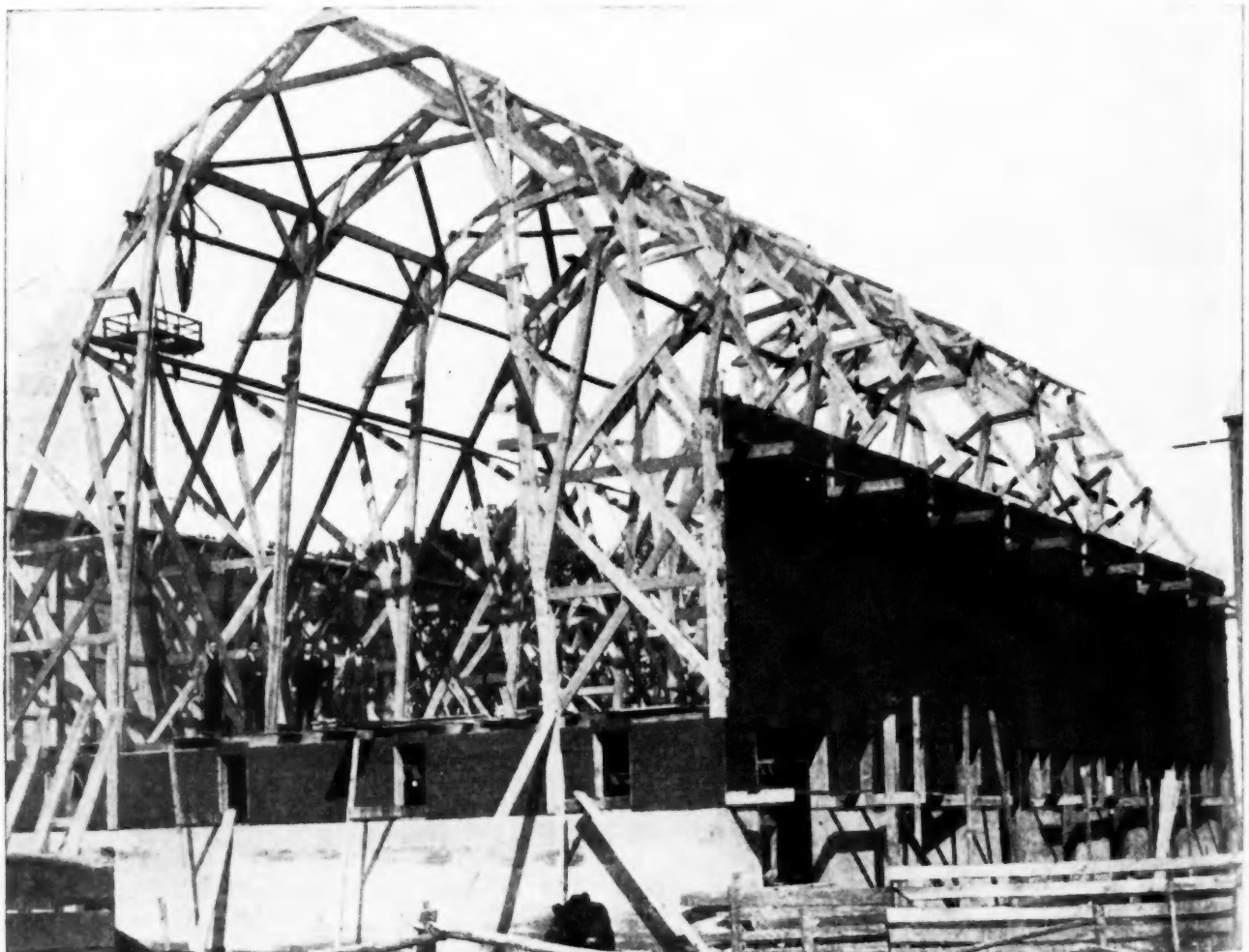
"Plank frame barns—using nothing heavier than 2-inch plank—cost less to build, and are becoming very popular. The principal reasons for this are, that this method saves in cost of lumber, and provides for more storage room in the hayloft.

PRACTICABILITY:

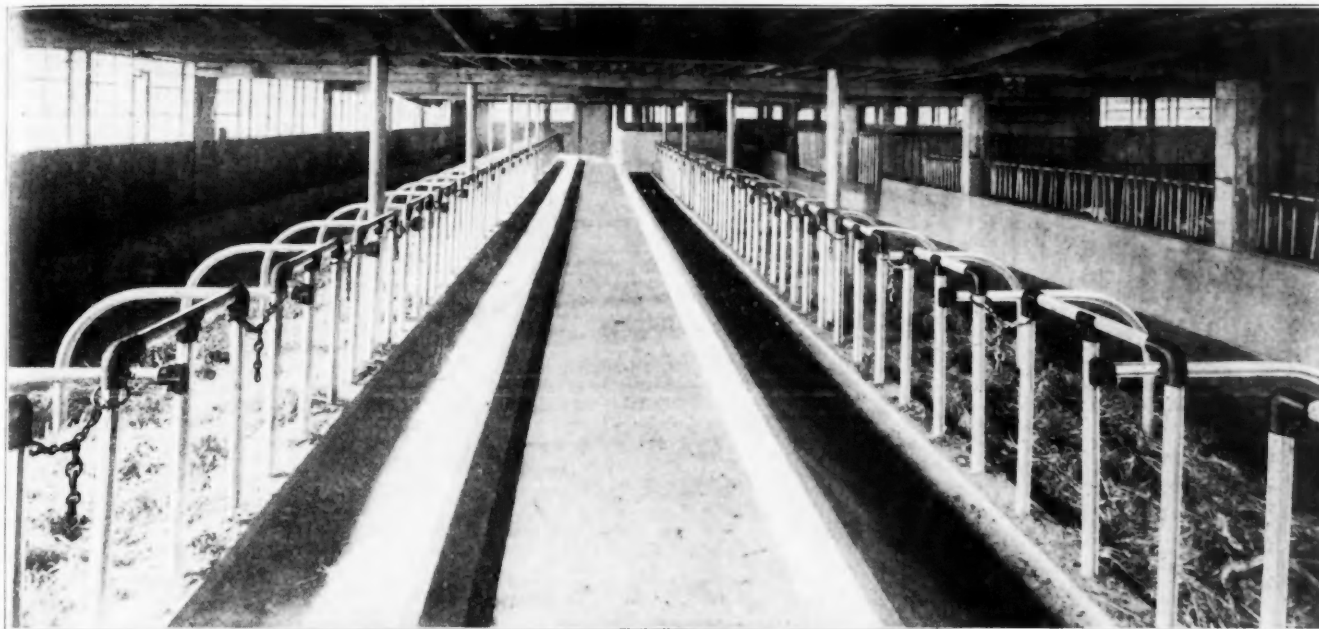
"This is a consideration of proper dimensions of stalls, passages, doors, mangers, gutters, hay-racks, posts, beams, bracing, etc. Since conditions vary so, each building should be designed for the particular farm needs. The buildings should be large enough to accommodate a bumper crop and as much stock as the farm will profitably maintain. It is far more expensive to add to a building than to make it large enough in the first place.

CONVENIENCE:

"There is a great difference in the *handiness* of barns. Such things as the arrangement for feeding, layout of feed passages, animals to face in or out, location of feed rooms, doors, and hay chutes, all mean ease or extra work as the case may be. Arrangement for cleaning, location of litter carrier and tracks, placing of doors and harness room, methods of storing hay,



Example of Extra Heavy Plank Construction for Wide Barns as Used by Builder A. G. Leindorff, Prairie Du Sac, Wis. This Barn being 50 by 100 feet. Every Barn Builder should be Thoroughly Familiar with All of the Various Types of Plank Frame Roof Trusses. The Purlin Posts are Placed Far in from the Walls to Give Extra Strength, a Plan which Builder Jackson Assured Farmer Dale would not be Required in His Horse Barn Construction, as Its Span would be but 36 feet.



Jackson, the Builder, had Several Interesting Photographs of Dairy Barn Interiors to Show Exactly what He Meant by Modern, Sanitary Equipment. Some Photographs of His Own Work; Some of Other Barn Builders. This is a View of the Cow Stable of the Woodlawn Farm, Geo. M. Flinn, Proprietor, Owatonna, Minn.

provision for installing hay forks—are matters for expert advice.

"The buildings should be arranged so that they will save time and steps each day; for dairy work must be done twice a day every day in the year. A slight fault in arrangement may mean a large amount of extra work in a year's time. Let us design these buildings so that everything will have a place, and cut out all useless steps and wasted work. Keep the buildings clean and the stock contented, but do it with less labor.

SANITATION:

"By sanitation we mean location of windows for distribution of light, doing away with obstructions to light, providing proper height of windows from floor, giving proper slope to stalls, passages, and gutters for good drainage, arranging for a constant circulation of fresh, pure air, making the stable floor impervious, easily flushed out, and finishing off ceilings and side walls to be dust free.

"You cannot give too much sunlight to your stock. If you want a healthy herd, you should let sunlight into every nook and corner of your building at least once each day. Sun is nature's disinfectant, and cleans a stable of disease germs. It makes contented stock and produces healthful growth. One of the weakest points in barn construction is the small amount of window space usually allowed. A good plan is to figure approximately six square feet for each animal, and not less than four square feet."

With all of these points fixed in Mr. Dale's mind, they proceeded with the plans.

Planning the Combined Dairy Stable and House Barn

"First of all," said Mr. Dale, "about my dairy and horse barn. I want a sanitary barn where certified milk can be produced; but at the same time I want to keep the cost down."

So the contractor showed him photos of barns that

he had built, and plans and pictures that he had received from the various barn equipment companies.

"A one-story barn for the cows, Mr. Dale, will be more sanitary; and where the horse and stock pens are to go could be full two-story in height. This type of construction is just as cheap, or a little cheaper in the long run."

So they started to make a rough floor plan of this large barn. The builder had prepared a small chart with which he could tell at a glance how long a barn should be for a certain number of cows. Mr. Dale wanted a stable for 24 cows in two rows of stanchions. After a glance at his chart Jackson found that it would be 50 feet long, allowing plenty of room for alleys and labor-saving devices.

Table shows number of stalls, length of row, and width of stalls.

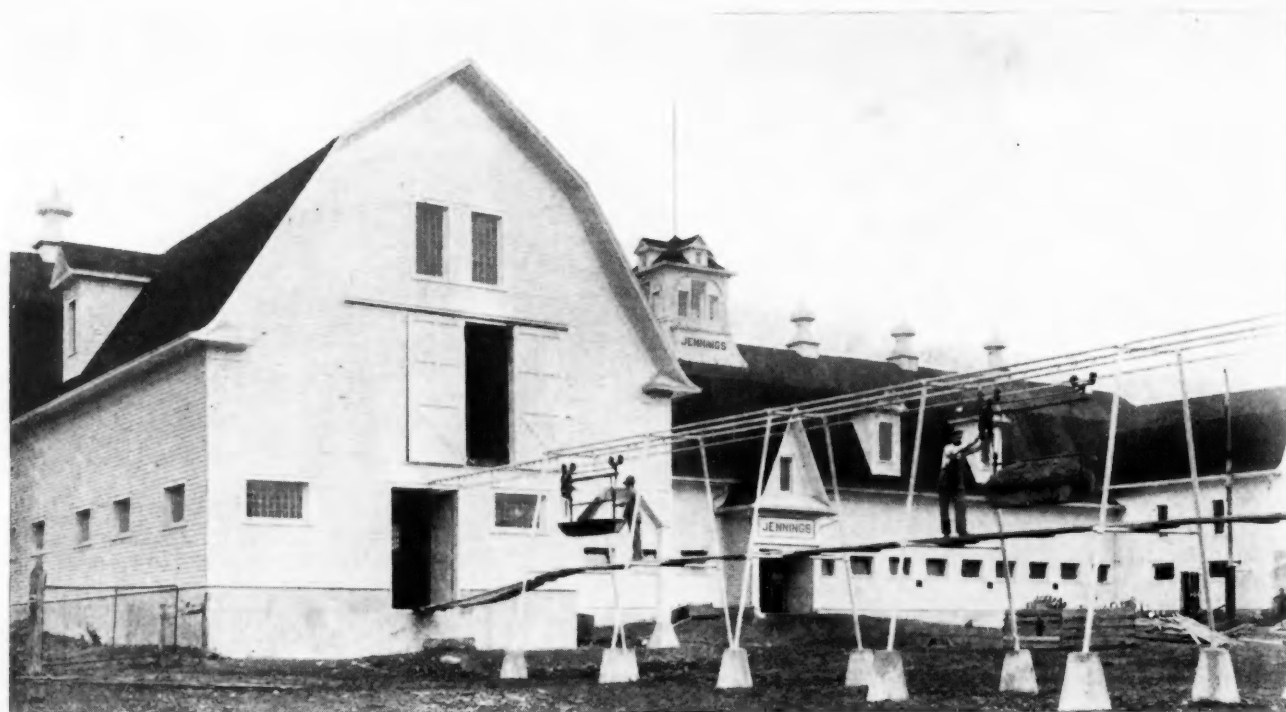
No. of Cows in Row.	1	2	3	4	5
1	3 ft. 0 in.	3 ft. 2 in.	3 ft. 3 in.	3 ft. 4 in.	3 ft. 6 in.
2	6 ft. 0 in.	6 ft. 4 in.	6 ft. 6 in.	6 ft. 8 in.	7 ft. 0 in.
3	9 ft. 0 in.	9 ft. 6 in.	9 ft. 9 in.	10 ft. 0 in.	10 ft. 6 in.
4	12 ft. 0 in.	12 ft. 8 in.	13 ft. 0 in.	13 ft. 4 in.	14 ft. 0 in.
5	15 ft. 0 in.	15 ft. 10 in.	16 ft. 3 in.	16 ft. 8 in.	17 ft. 0 in.
6	18 ft. 0 in.	19 ft. 0 in.	19 ft. 6 in.	20 ft. 0 in.	21 ft. 0 in.
7	21 ft. 0 in.	22 ft. 2 in.	22 ft. 9 in.	23 ft. 4 in.	24 ft. 6 in.
8	24 ft. 0 in.	25 ft. 4 in.	26 ft. 0 in.	26 ft. 8 in.	28 ft. 0 in.
9	27 ft. 0 in.	28 ft. 6 in.	29 ft. 3 in.	30 ft. 0 in.	31 ft. 6 in.
10	30 ft. 0 in.	31 ft. 8 in.	32 ft. 6 in.	33 ft. 4 in.	35 ft. 0 in.
11	33 ft. 0 in.	34 ft. 10 in.	35 ft. 9 in.	36 ft. 8 in.	38 ft. 6 in.
12	36 ft. 0 in.	38 ft. 0 in.	39 ft. 0 in.	40 ft. 0 in.	42 ft. 0 in.
13	39 ft. 0 in.	41 ft. 2 in.	42 ft. 3 in.	43 ft. 4 in.	45 ft. 6 in.
14	42 ft. 0 in.	44 ft. 4 in.	45 ft. 6 in.	46 ft. 8 in.	49 ft. 0 in.
15	45 ft. 0 in.	47 ft. 5 in.	48 ft. 9 in.	50 ft. 0 in.	52 ft. 6 in.

Sanitary Stalls and Stanchions

"As a practical barn builder, Mr. Jackson, what is your opinion as to the steel equipment such as I have seen featured in the farm papers?"

"They are all right—by all means use them. They cost a very little more and they give great satisfaction.

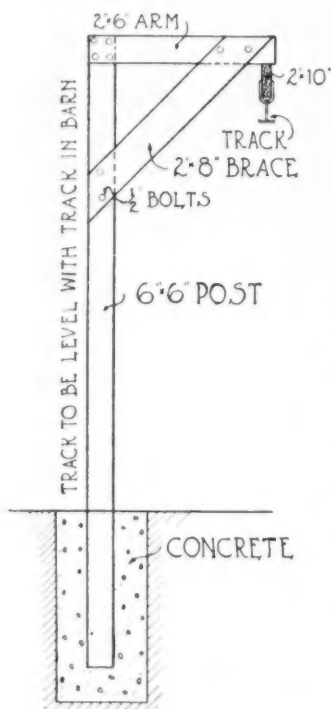
"Types of stalls and stanchions are best," continued the builder, "which present the least possible surface for collecting dust and dirt, and the least obstruction to the circulation of air. Stalls of wood have many flat surfaces and cracks which are difficult to keep clean, and in case of outbreaks of disease are not easy to



"Here, Mr. Dale, is a Good Idea for Litter Carrier Elevated Way to Manure Pit. This is a Photograph of the C. H. Jennings Barn, Towanda, Pa. See How the Litter Track is Carried on Iron Pipe Inverted U's Set in Concrete."

disinfect thoroly. The barns equipped with wood stalls where the foot and mouth disease broke out had to be destroyed and the owner compelled to install new stalls. Stalls made of metal pipes are therefore preferable.

"Sanitary steel stalls met every condition. They are constructed of high carbon tubular steel—the strongest material to be obtained. They do not obstruct the light or ventilation and they are fitted thru-out with overlapping, dust-proof, malleable iron connections. They are absolutely sanitary; there are no cracks or crevices to collect filth and breed bacteria. There are no sharp projections to injure the cows; every corner is rounded and perfectly smooth. A swing stanchion should be used, as it allows the cow plenty of freedom. This equipment will last as long as your barn, and will earn the amount of the original cost over and over again thru the increased profit from your cows; and while a profit-maker, each stall is a pleasure to you in the attractiveness it adds to the barn.



Detail of Wood Support for Feed and Litter Carrier Track. Post Set in Concrete to Prevent Rotting.

Litter and Feed Carriers

"Another excellent thing is the litter carrier. Just as a clean barn means healthy cattle and more and better dairy products, removing the unpleasant feature of cleaning the barn by using a litter carrier will result in more frequent cleaning. The carrier places the litter either in your spreader or at any desired distance from your barn, insuring not only a clean barn but a clean yard as well. It saves you the labor and also the annoyance of wheeling or carrying the manure out and returning to the barn, thus eliminating the most disagreeable part of all farm work.

"This all means more profits. Work is often done at a great disadvantage; as for instance, when silage must be carried out the cows in baskets. Install a feed carrier and cut out all the useless steps. Farm animals consume large amounts of feed, such as hay and silage. To reduce labor, the feed should be stored as close to the point of feeding as possible. The location of the silos should be so as to permit easy feeding of the cows, and other stock which require a great amount of silage.

Storage Capacity of Various Roof Types

"The amount of roughage that can be stored above the horse and stock pens depends on the way the roof is built. A gambrel roof gives a great deal more storage, and costs less money than another type of roof for the same storage capacity. What we call a self-supporting roof of this type has the advantage of requiring less material and labor than the heavy timber roof; is just as strong, and forms a mow without any obstruction."

The contractor had prepared a drawing of the dif-

ferent roofs, showing their storage capacity which was very handy in estimating on the different roofs.

"You see the big advantage is that you get more storage space. The self-supporting roof holds one-third more than the other style timber frame barns. Another advantage is the ease of unloading and mowing away. There are no cross timbers to lift over and the hayfork outfit need only be lifted high enough to clear what is on the floor before swinging it back over

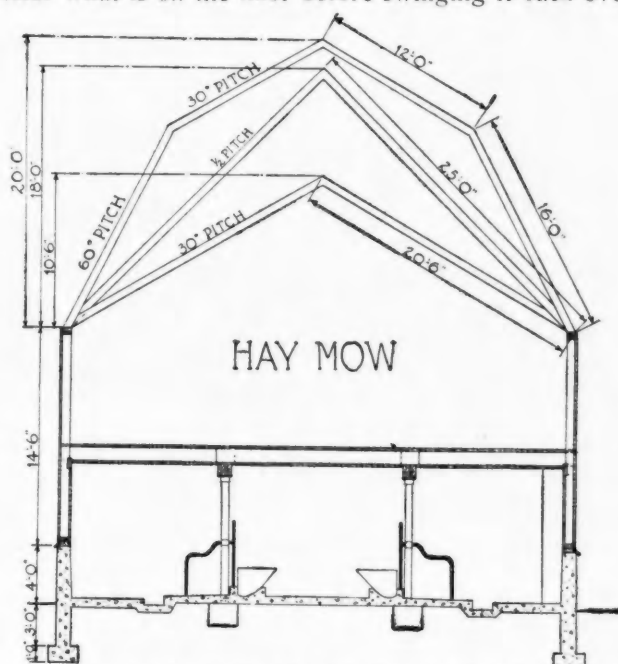


Diagram Showing How Mow Capacity for Various Types of Roof. The High Gambrel is Most Economical Per Cubic Foot of Contained Space.

the mow. This saves labor, time and tackle. When raising such a barn, it is not necessary to secure a large crew of men, and have a 'bee,' which is another beauty of the self-supporting plank frame barn. The pitch of the roof is three-quarter in the lower section, and one-fourth in the upper section."

Barn Ventilation

After the arrangement was worked out to save all the labor possible, Mr. Dale brought up the subject of ventilation; said he wanted a good ventilating system. The builder informed him that metal cupolas are handsome and efficient.

"The old style wood ventilator is a breeding place for sparrows and does not ventilate. The attractive appearance of the galvanized iron ventilators is not its most valuable feature. It is ventilating efficiency and the economy that its life-long service gives the owner, which make the metal cupola ventilators the biggest value ever offered. It is strong enough to resist any wind that your buildings will stand up to and is durable enough to outlast any building you put it on. It cannot rot, does not rust and cannot warp. It does not leak either snow or rain; and birds cannot nest in it. It has made good on farm buildings all over the country, and there is no reason why it shouldn't. They conform to all the requirements of a good cupola."

The contractor then turned to his catalogs on ventilation, and chose the make that he knew would give

good results. The size was the next thing to work out, and turning to his table on the sizes of flues, he found the size in a moment. This put more confidence in Mr. Dale that his friend Jackson was the man to design and build his farm buildings.

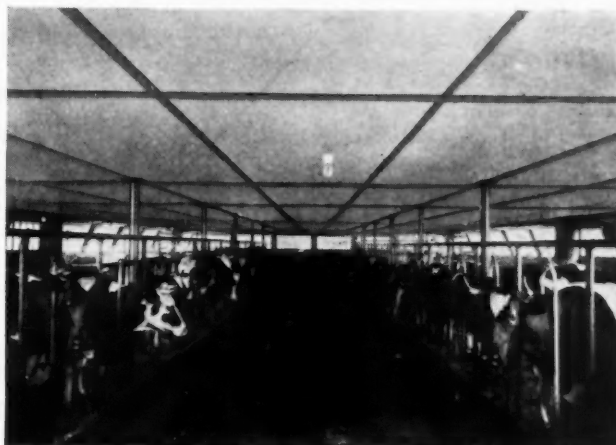
Ventilation Table—Flue Areas in Square Inches, Sizes in Inches

No. head of stock.	KIND OF STOCK.							
	Horse.		Cow.		Swine.		Sheep.	
	Area.	Size.	Area.	Size.	Area.	Size.	Area.	Size.
1.....	54	6x9	44	4x11	16	4x4	12	3x4
2.....	108	9x12	88	8x11	27	3x9	22	2x11
3.....	156	12x13	128	8x16	40	5x8	33	3x11
4.....	216	12x18	170	10x17	54	6x9	44	4x11
5.....	264	12x22	216	12x18	66	6x11	55	5x11
6.....	312	12x26	264	12x22	80	8x10	66	6x11
7.....	360	12x30	300	12x25	92	8x12	77	7x11
8.....	420	12x35	352	16x22	108	9x12	88	8x11
9.....	468	12x39	384	16x24	120	10x12	99	9x11
10.....	516	12x43	416	16x26	132	11x12	110	10x11

Cows Face In or Out?

Mr. Dale did not know whether he wanted the cows to face in or out. The builder told him that if the cows faced towards the center of the barn he could take all of the feed down one alley, and distribute it right and left as he went along.

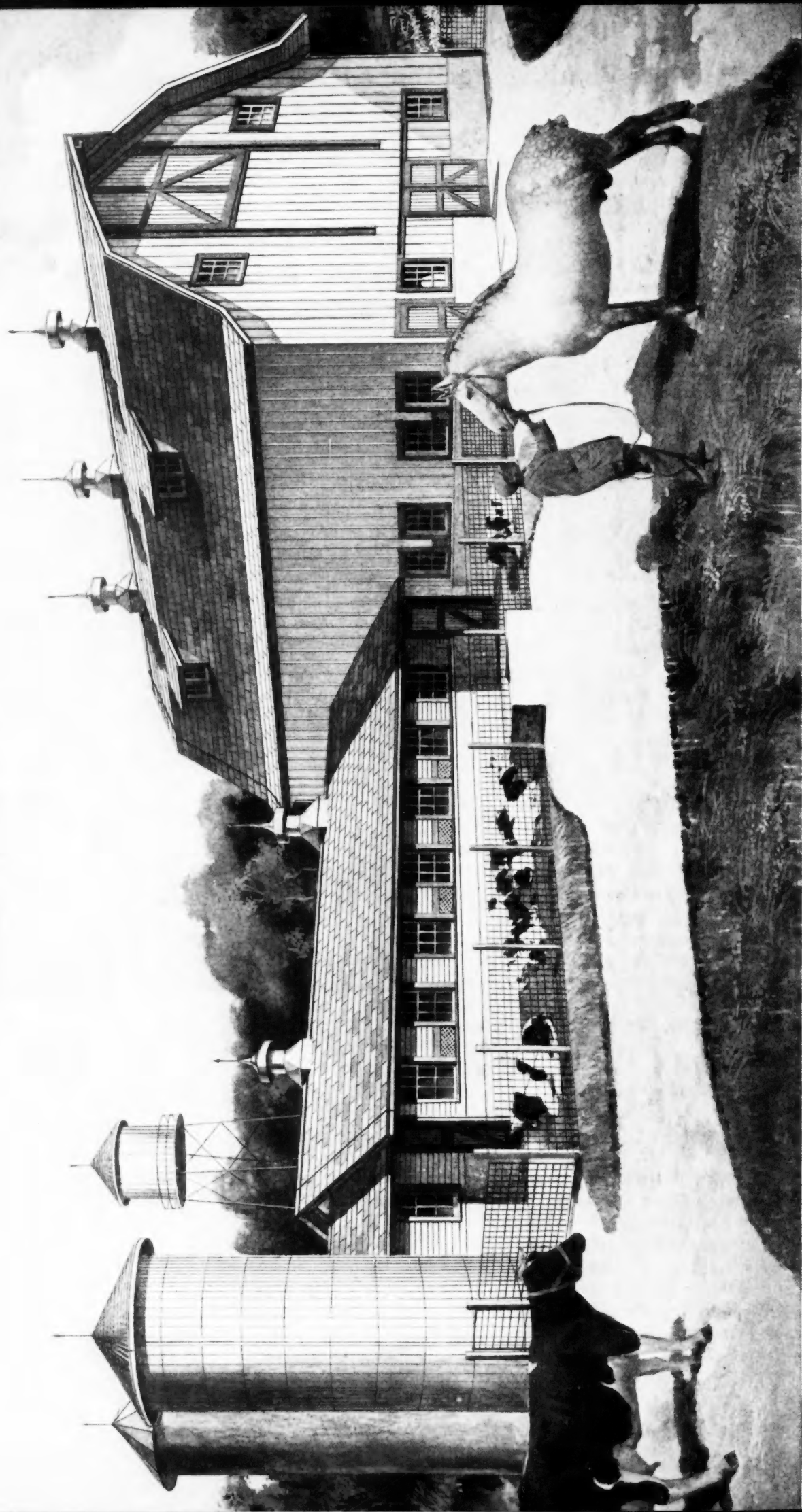
"In the pasture a cow keeps her head away from the sun as she eats. Sunlight strikes the gutters di-



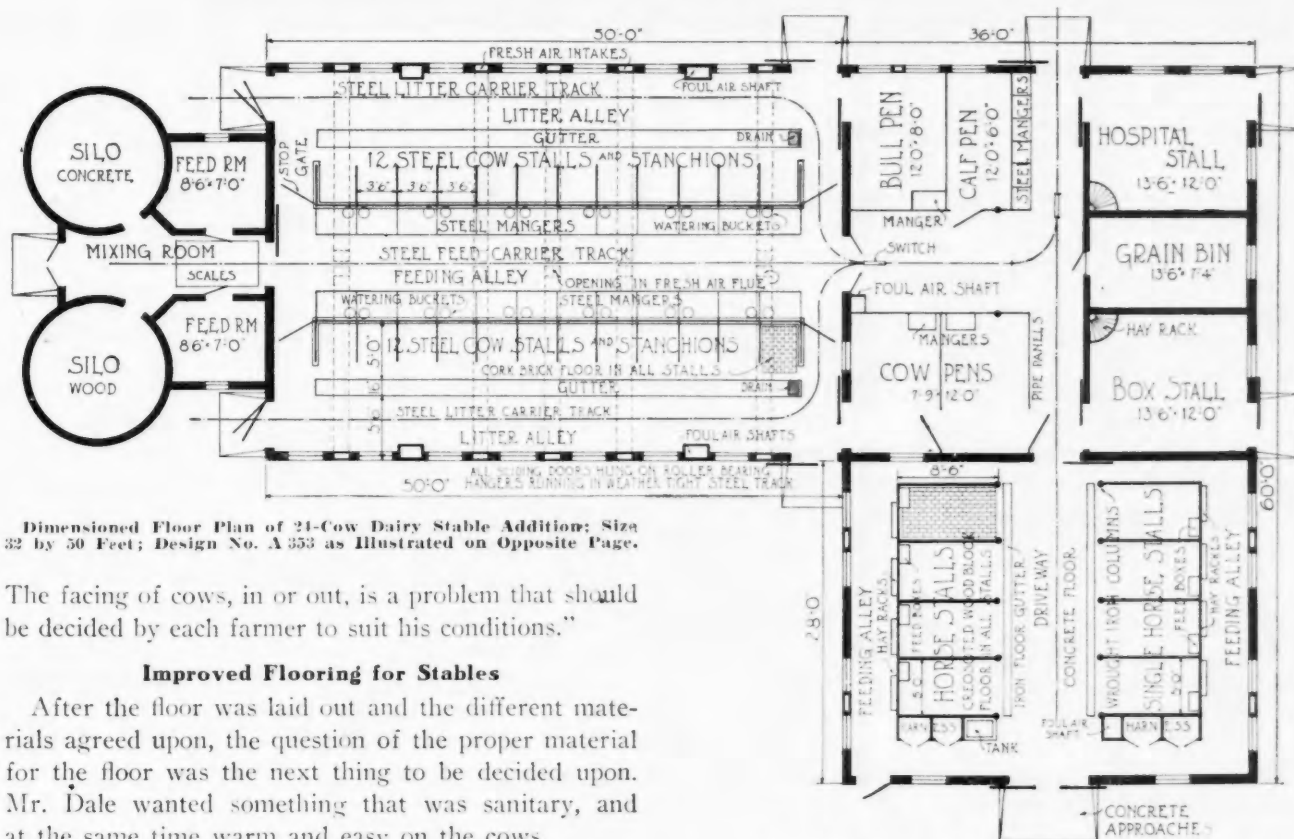
"I Recommend Wall Board for Ceiling Your Cow Barn. It Makes a Smooth, Sanitary Surface, Without Cracks. Here is a Photo of the Green Acres Farm Dairy Barn, Manchester, N. H. It is Ceiled with Wall Board, Joints Battened."

rectly, and they get full benefit of the disinfecting value of the sunshine, which is the world's greatest disinfectant. It gives you light behind the cows when milking in the mornnig and night. The outtake flues for ventilation are never in the way when placed at the side of the barn, and do not occupy space which could well be used for other purposes.

"Here, on the other hand, are the points in favor of cows facing out. It is well to do all your feeding along one alley, but you do three-fourths of the work behind the cows; cleaning and milking are certainly more work than feeding. Furthermore, there never was a barn built, where the cows faced the center, that was wide enough to prevent the walls from becoming spattered with manure. The face-out arrangement prevents this; it keeps all the manure along one alley.



Photographic Architectural View of Horse Barn and Dairy Stable as Designed for Farm of Average Size. Horse Barn is Two-Story, Gambrel Roof; Size 36 by 60 feet. Dairy Stable is One-Story, Gable Roof Addition; Size 32 by 50 feet. This is Not Only the Most Sanitary Way, but Also the Most Economical. When Writing in Regard to This, Please Refer to No. A 333. For Floor Plan Diagram and Complete Details of Construction, See Pages 63 to 69.



Dimensioned Floor Plan of 24-Cow Dairy Stable Addition; Size 32 by 50 Feet; Design No. A 353 as Illustrated on Opposite Page.

The facing of cows, in or out, is a problem that should be decided by each farmer to suit his conditions."

Improved Flooring for Stables

After the floor was laid out and the different materials agreed upon, the question of the proper material for the floor was the next thing to be decided upon. Mr. Dale wanted something that was sanitary, and at the same time warm and easy on the cows.

"The stable should have a hard floor which can be readily cleaned," said barn builder Jackson. "For this reason a dirt floor is undesirable. A cement floor is easily cleaned and prevents waste of the liquid manure. It is liable to be cold, however, and therefore where the cows stand should be paved with cork brick or creosoted wood block."

The contractor showed Mr. Dale a sample of improved floor blocks which he had received from a manufacturer, and could recommend very highly. Mr. Dale was satisfied that these blocks were all right, and wanted the contractor to use them.

Stable Gutter Construction

"Properly constructed gutters are essential to strict sanitation. They should have vertical sides and be at least 5 inches deep. The most satisfactory width has been found to be 16 inches wide and 7 or 8 inches deep on the stall side, and 5 inches deep on the other. The alley behind the cow should be pitched slightly to cause liquid manure and flushing water to flow back into the gutter. The gutter should incline so as to drain readily to a gutter drain. The best practice is to pitch the gutter one inch in 20 feet."

The contractor suggested that they build the wall of this large barn 4 feet high, as this would keep the sill up out of the moisture, and all the litter that would come in contact with the walls could easily be washed off with the hose.

Some Barn Materials Selected

While Jackson was busy drawing plans, Mr. Dale discovered samples of metal battens which the con-

Ground Floor Plan of Main Part of Barn A 353. Size 36 by 60 Feet. Stabling Eleven Horses in Stalls Besides the 36 by 32 Box Stall and Pen Section.

tractor had lying on his desk. He informed the contractor that he wanted to use these if he could recommend them. The contractor assured Mr. Dale that they would not come loose, but would last as long as the nails.

"What kind of roofing or shingles do you favor, Mr. Dale," the builder required, "something, I suppose, that is fire resisting, and at the same time look well on the roof when finished."

Jackson showed him some roofs that he had covered with asphalt shingles, which were standing the weather in fine shape; and they decided that they would use them at least on the dairy and horse barn.

"How about the inside lining for the dairy and horse barn?" I hear it said that matched and beaded ceiling is not very good to use, because bacteria can lodge in the cracks and grow."

"Yes," the contractor replied, "I am recommending wall board now for this use, as it can be put on cheaply and at the same time is sanitary, offering no cracks or joints. I would urge the use of a great deal of wall board in these buildings."

Mr. Dale was somewhat in doubt about the barn doors, whether to have them roll or hinged, but the contractor showed him different improved barn door hangers on the market, pointing out the most important features, after which Mr. Dale decided to use the improved barn-door hanger and track. The contractor advocated this style of fitting, for the trolley is always protected from snow and ice, as well as from the

birds. This keeps the door always in good running order. The hangers are adjustable so that the door may be run close to the building or several inches away, as desired. Doors built up with one thickness running at right angles to the other, will prevent warp-

ing, and if building paper is placed between the two thicknesses, it will make a well insulated surface. If properly built, with a beveled check rail around the edges, they can be made practically air-tight and at the same time work free and loose as soon as opened.

Planning the Combination Horse and Storage Barn with One Story Dairy Stable Wing

Some dairymen object to storing feed above the cow stable. At the same time everyone recognizes the importance of keeping large quantities of winter roughage within easy reach of dairy cows.

The plan worked out by the contractor makes a convenient barn, one that is thoroughly sanitary and sensible, and it separates the cow stable entirely from the feed storage.

There are two silos, one of wood and the other of concrete, placed conveniently for filling with green corn in the fall and for feeding out in winter. They are placed at one end of the dairy stable, and are connected with the stable by a one-story feed room. The silage is let down from the silos thru chutes which deliver the silage from either silo in the center directly in front of the main feed alley, so that the feed carrier may load up easily and quickly and distribute the silage the whole length of the barn. The same carrier runs thru into the horse barn to deliver silage to the horse and colt mangers and to load up with alfalfa hay or other roughage to pay out on the return trip for use in the cow mangers or stalls.

There is a good deal in the way a feed carrier is hung. The new feed carrier tracks are made of steel rolled true by heavy machinery. The hangers are carefully made to easily adjust and level the track, so that the car runs easily and freely back and forth. It is a great satisfaction to have a car that will run without binding or unnecessary friction.

The foundation of the building is of concrete, which is started by excavations for the walls, which extend all the way around the building, including the silos. At different points thru the center are concrete piers which support the storage mow in the main part of the barn. These piers are made heavy with wide footings. Other lighter piers are built under the mangers in the cow stable part to prevent any possible settling. The foundation walls and piers extend down to solid ground, and the walls reach up above grade about 4 feet.

A concrete floor is then built in which extends over the whole surface of the cow stable and horse barn. This floor is made carefully by first leveling and settling the ground by flooding with water. In digging the trenches for the walls and holes for the piers the whole surface earth is worked over and loosened. It seems impossible to settle it back into place in a dry condition. Time and labor are saved by turning in water to soften all the particles of earth so it will pack together solid. This preliminary work pays in the lasting qualities of the concrete floor.

The cross section drawings show the shape of the mangers, feed alley, slope of the standing floors, size, shape and depression of the gutters, and the floors behind the cows. All of these dimensions, sizes, grades and inclines have been worked out during recent years according to the experience and best practice of thousands of dairymen. It would be difficult to improve

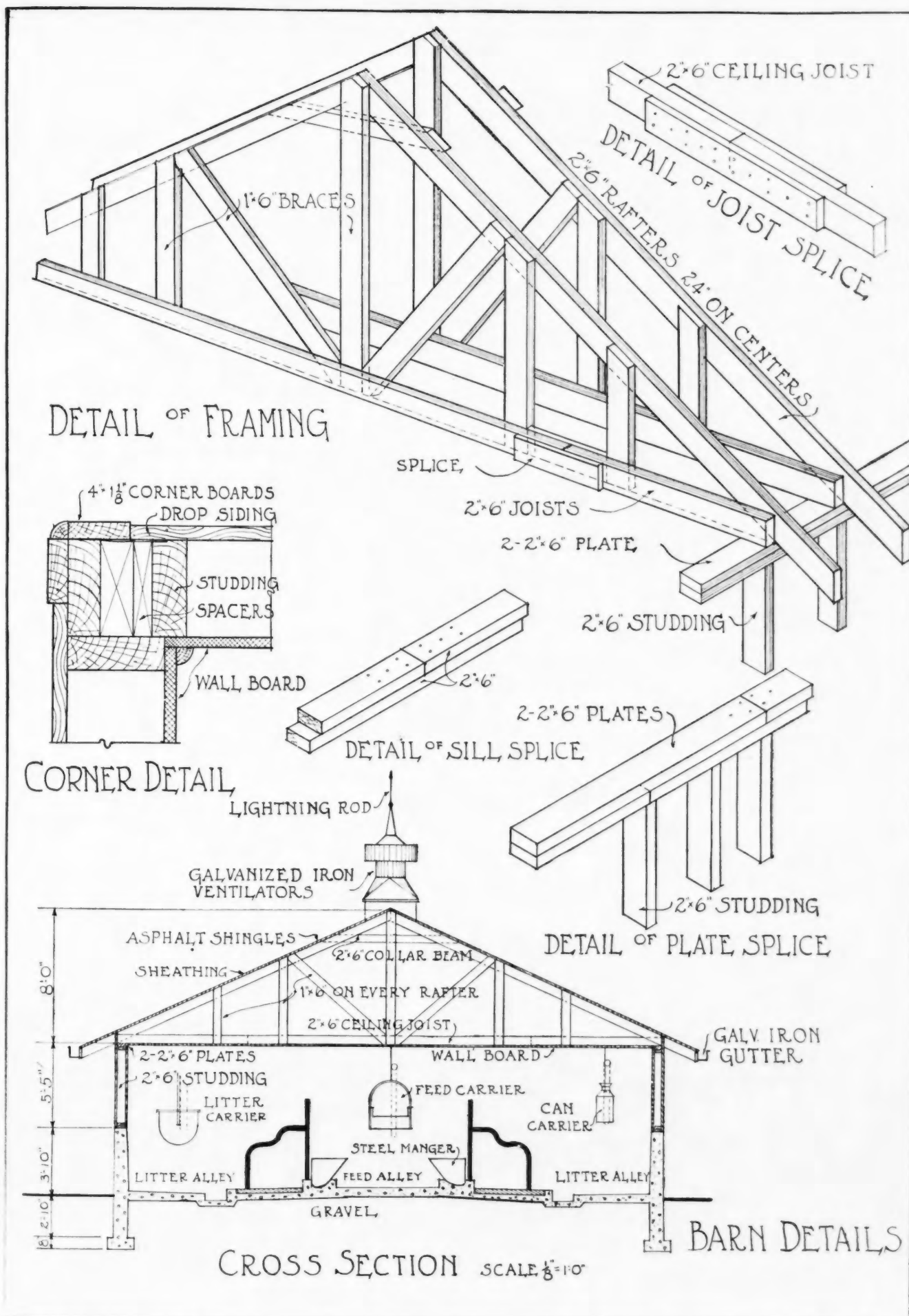


DURING CONSTRUCTION.

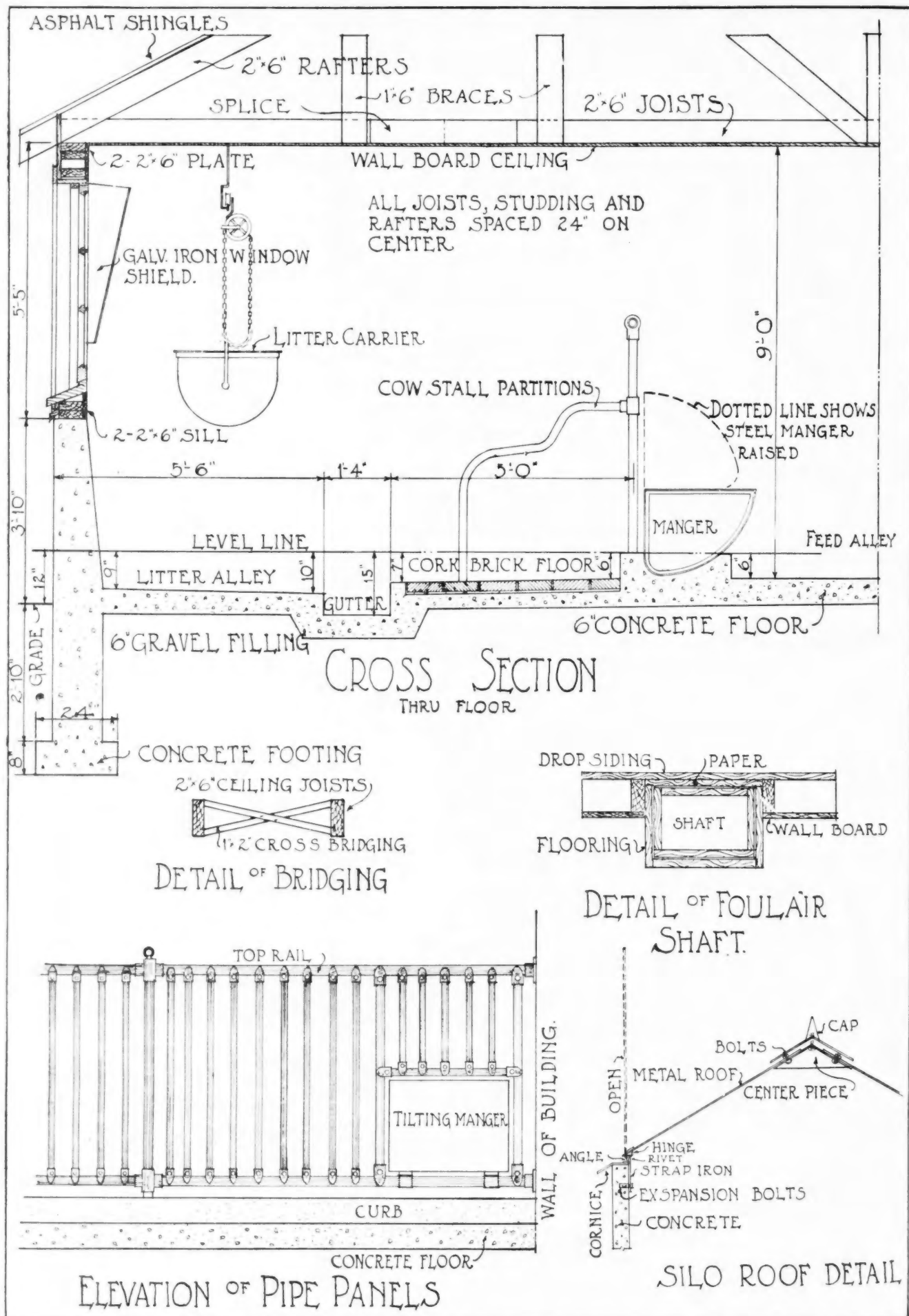
BARN AND SILO BEFORE FIRE.

ALL THAT THE FIRE LEFT.

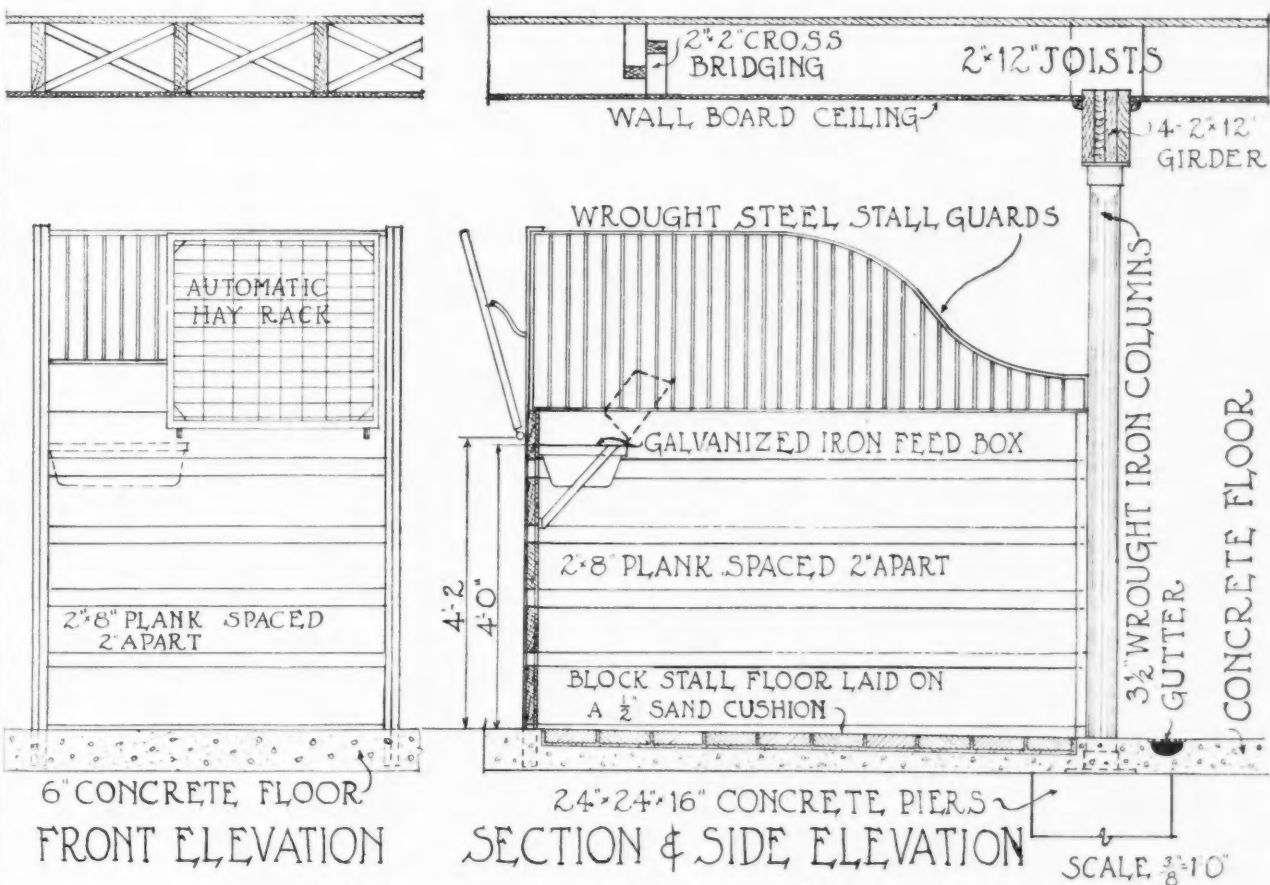
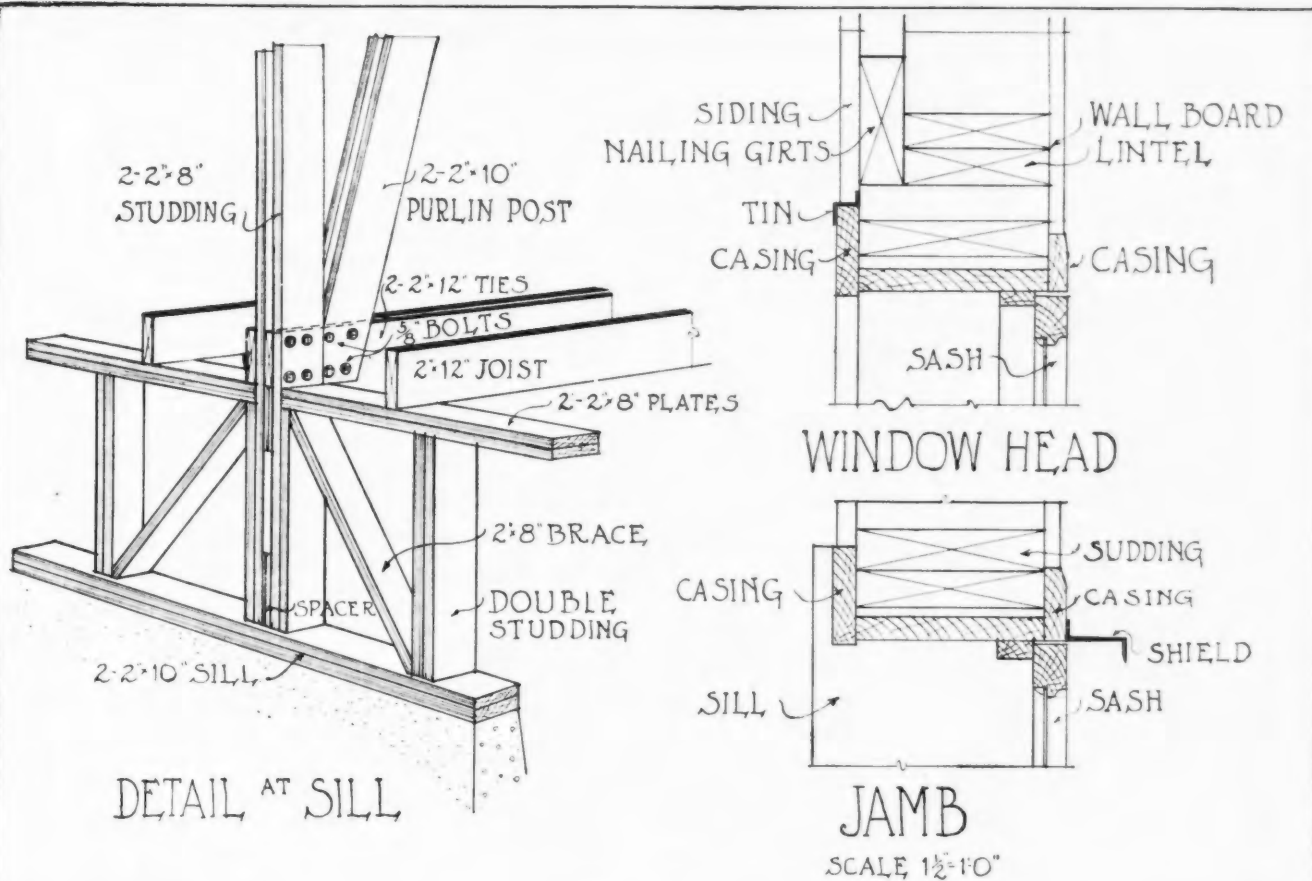
"Here are Three Little Photographs that Tell a Convincing Story. They Show the Durability of the Silo That is Built of Cement Plaster on Metal Lath. A. W. Smith, Whose Farm is Near Hubbard, Ohio, Had This Concrete Silo Built. A Quick Blaze Destroyed All of His Other Buildings, and Burnt the Silo Roof, but Otherwise Did Not Injure the Silo Nor Its Contents, which Ensilage Became the Only Food Supply for His Herd Thruout the Winter."



Details of Gable Roof Dairy Stable, Design No. A 353 as Illustrated on Page 62; Span of Roof 32 feet. Concrete Foundation Walls Extend Up 3 feet 10 inches. Above This the Inside is Lined with Wall Board, for Both Side Walls and Ceiling.



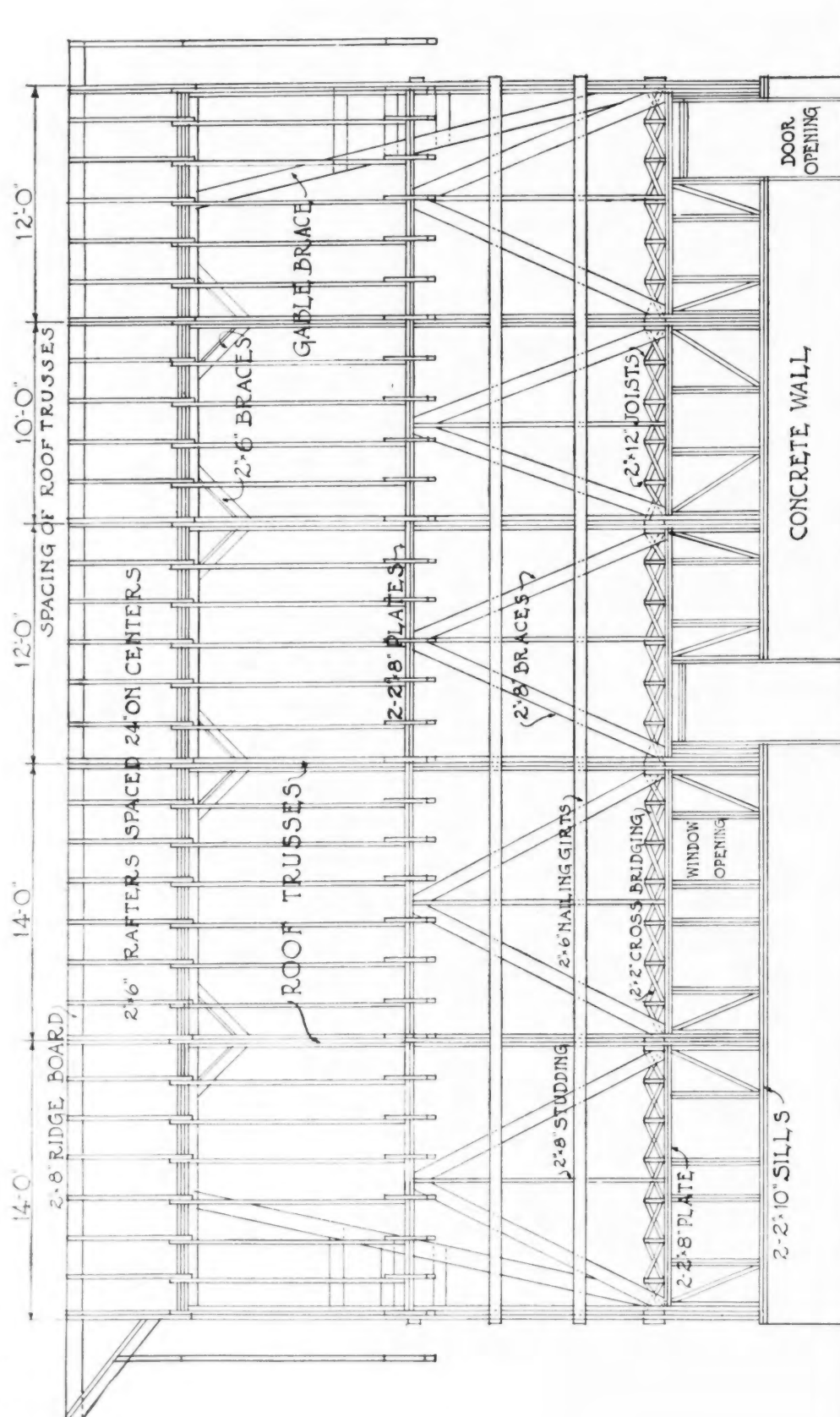
Details of Dairy Stable, Design No. A-353, as Illustrated on Page 62. Note How Cow Stalls are Floored with Cork Brick. Cow Stall Partitions and Pens of Metal Piping also Specified. Note Improved Silo Roof Detail, which Shows How to Put on an Extension Metal Roof.



HORSE STALL DETAILS

Details of Horse Stable Part of Combination Barn No. A 353 Illustrated on Page 62. Note Improved Stall Flooring of Creosoted Blocks Laid on the Concrete. Plank Frame Construction at Sill Also Clearly Shown.

NOTE: THIS TYPE OF TRUSS CAN BE SPACED FROM 10 TO 14 FT. ON CENTERS.

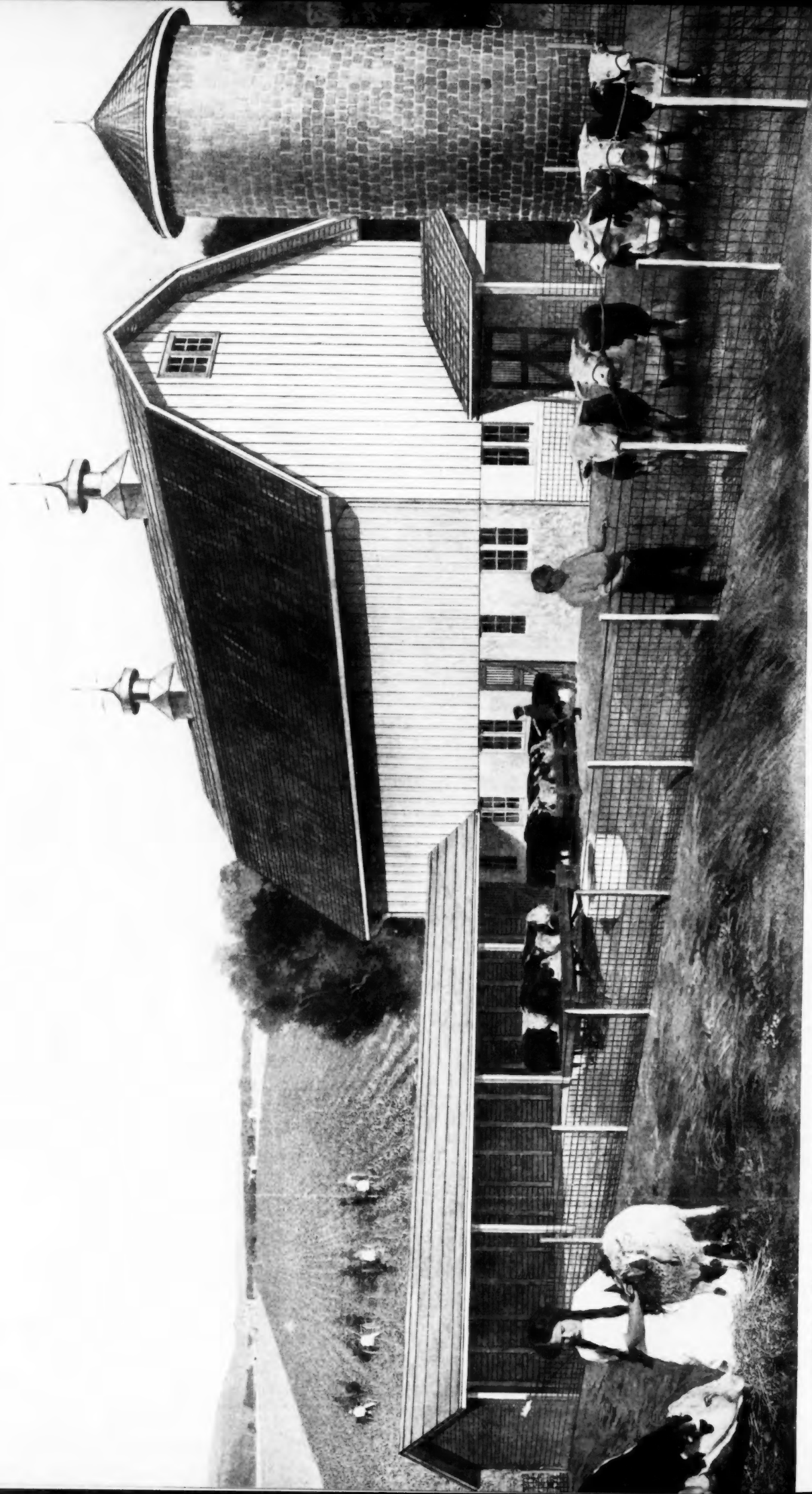


OUTLINE OF CONCRETE FOOTING

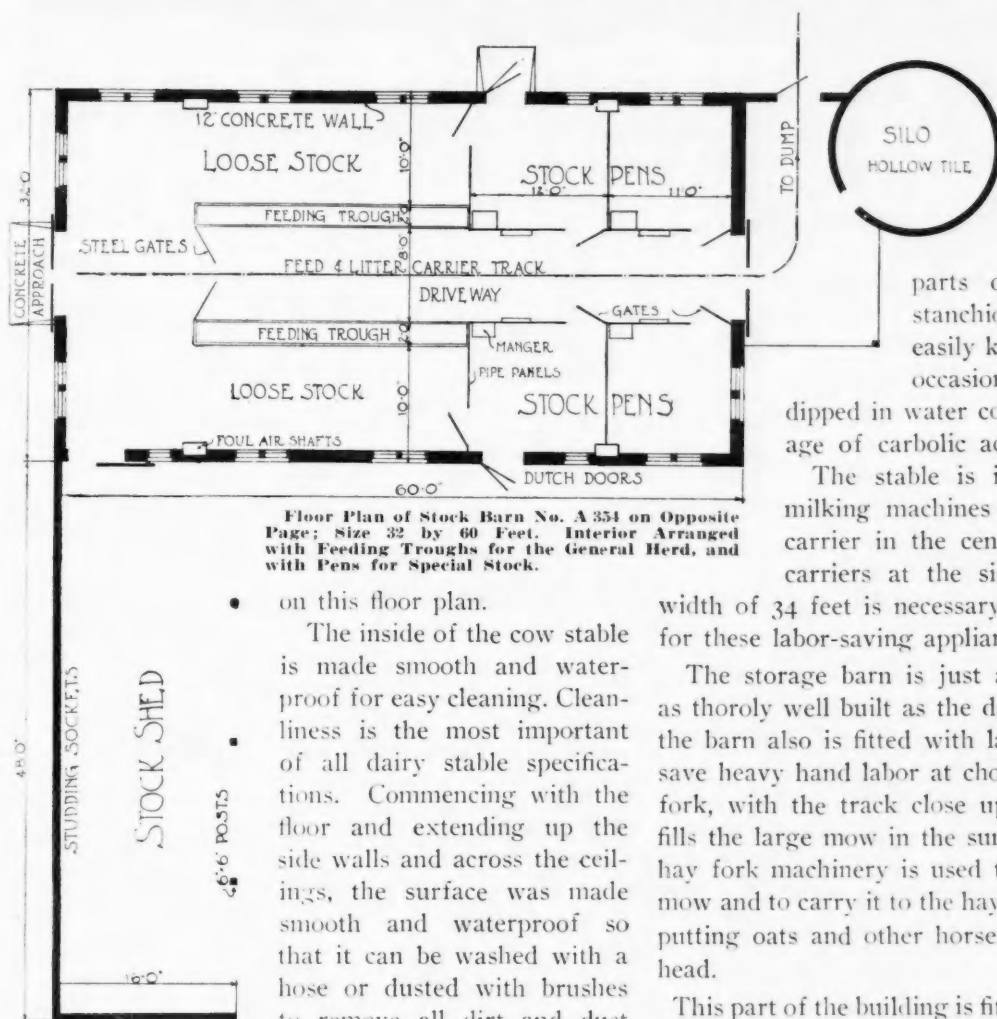
SIDE FRAMING OF TWO STORY BARN

SCALE $\frac{1}{8}'' = 1'-0''$

Side Framing Detail of Gambrel Roof Horse and Storage Barn No. A 333 Illustrated on Page 62. Note That Plank Frame Trusses are Set from 10 to 14 Feet Apart to Work Out Right with Floor Plan.



Photographic Architectural View of Beef Cattle Barn as Planned for Farm of Average Size. This is a Concrete Basement Barn, 22 by 60 Feet, of Heavy Timber Construction; High Gambrel Roof; Stock Shed Extends out 18 Feet, Shutting Out the West Winds from the Barnyard. When Writing in Regard to This Design, Please Refer to No. A 321. For Dimensioned Floor Plan and Details of Construction, See Pages 51 and 53.



Floor Plan of Stock Barn No. A 354 on Opposite Page; Size 32 by 60 Feet. Interior Arranged with Feeding Troughs for the General Herd, and with Pens for Special Stock.

- on this floor plan.

The inside of the cow stable is made smooth and waterproof for easy cleaning. Cleanliness is the most important of all dairy stable specifications. Commencing with the floor and extending up the side walls and across the ceilings, the surface was made smooth and waterproof so that it can be washed with a hose or dusted with brushes to remove all dirt and dust

particles. Dust is recognized as being a harbor for bacteria. Disagreeable and filthy kinds of dirt and dust harbor the most destructive and objectionable forms of bacteria. One of the greatest advantages in modern sanitary stables is the opportunity afforded of keeping the premises clean. It is impossible to produce high grade, sanitary milk or butter in a rough, dingy stable where dirt accumulates in spite of the

width of 34 feet is necessary to make sufficient room for these labor-saving appliances.

The storage barn is just as carefully planned and as thoroly well built as the dairy stable. This part of the barn also is fitted with labor-saving machinery to save heavy hand labor at chore time. There is a hay fork, with the track close up under the peak, which fills the large mow in the summer time, and the same hay fork machinery is used to lift the hay out of the mow and to carry it to the hay chutes in winter, and for putting oats and other horse feed into the bins overhead.

This part of the building is fitted with metal ventilators on the roof, which are connected with ventilating flues to carry off the foul air from the stables. All doors in the cow and horse stable and the upper part of the barn are provided with improved door tracks and hangers. The windows are made on the ventilating principle. Considerable cork brick flooring is used in the cow stables and other modern improvements are noticeable thruout the building.

Remodeling the Timber Frame Stock Barn

The next building worked out was the plan for the general stock barn, a heavy timber concrete basement barn, size 32 by 60 feet, with a 48-foot stock shed addition.

The contractor said: "This building will take care of the overflow from the dairy stable in such a way as to get a profit from the young stock.

"In the dairy stable you feed dairy cows to produce milk. In this building you will feed young cattle and calves to produce growth. This barn will also house dry cows which will require maintenance rations only. And there will be some beef cattle to crowd with fat producing feeds.

"So we must build accordingly."

Catalogs were again examined to find equipment to meet all of these various requirements.

There were old timbers to make the frame. The floor and foundation were made of concrete. That was easy. But labor-saving machinery to do all of the heavy work of silo filling and threshing once a year and the lighter work every day at chore time required careful figuring.

There is a regular system of chutes and feed racks built in combinations for the proper handling of both hay and straw.

The electric lighting system and the watering of valuable animals in mild weather and during extreme cold periods, the handling of the manure, the mixing of silage and grain with cotton seed meal and other concentrates to make up balanced rations with the least possible cost of labor, required head work.

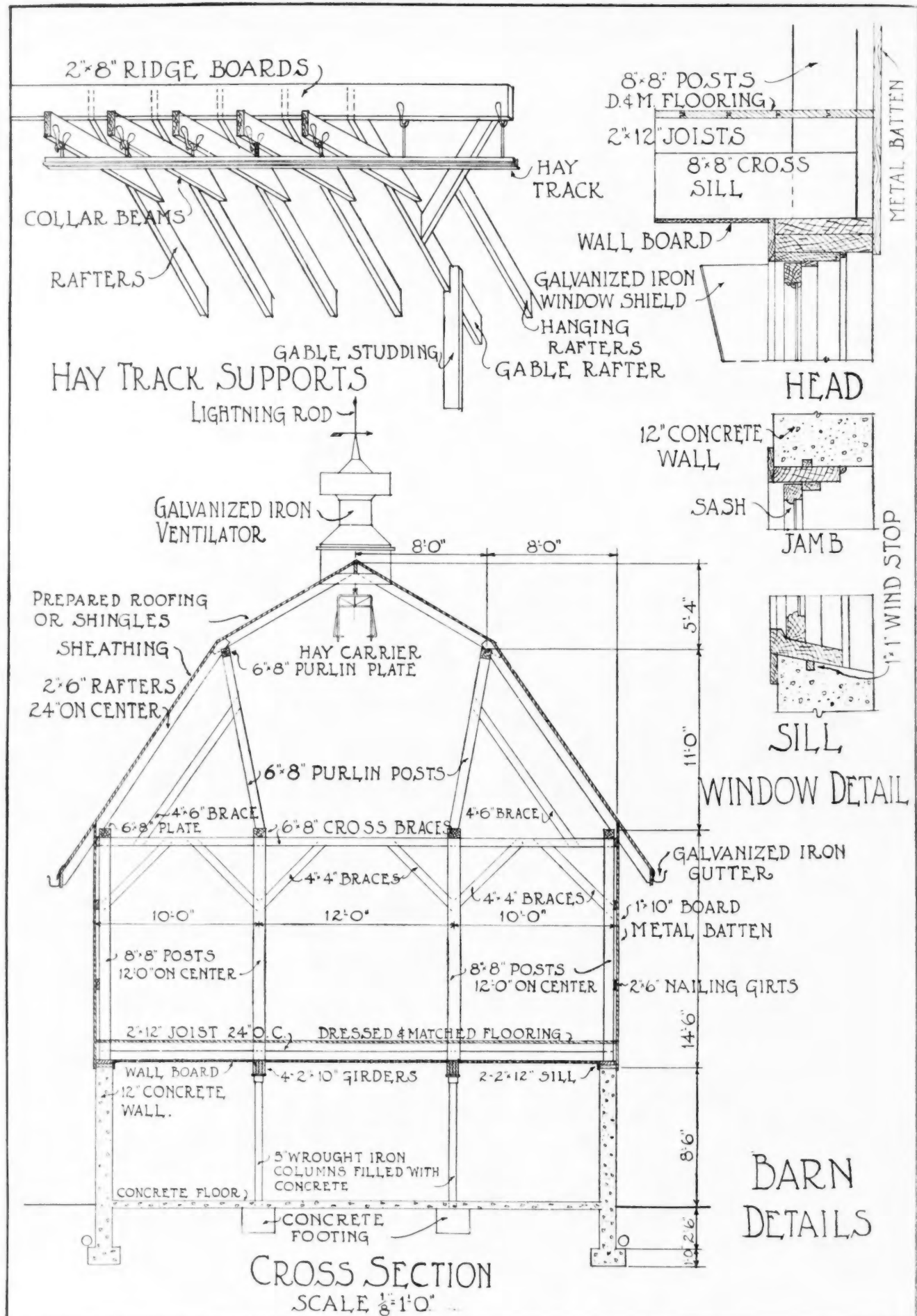
best care and attention.

For the same reason the stanchions and cow stall partitions are made of steel of the most approved design. Like the other

parts of the stable, the steel stanchions and partitions are easily kept clean by wiping them occasionally with a damp cloth

dipped in water containing a small percentage of carbolic acid or other disinfectant.

The stable is intended for the use of milking machines in addition to the feed carrier in the center and the two manure carriers at the sides. For this reason a



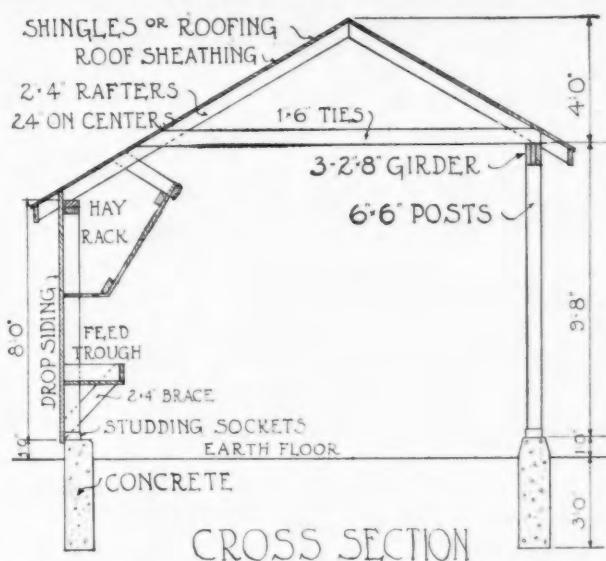
Details of Heavy Timber Framing for Stock Barn No. A 351, Illustrated on Page 70.

The Stock Shed Addition

In connection with the stock barn is a shed shelter to protect young stock from the cold north winds and from cold soaking rains. This shed is not expensive to build, but it is a great convenience and a great comfort to the cattle.

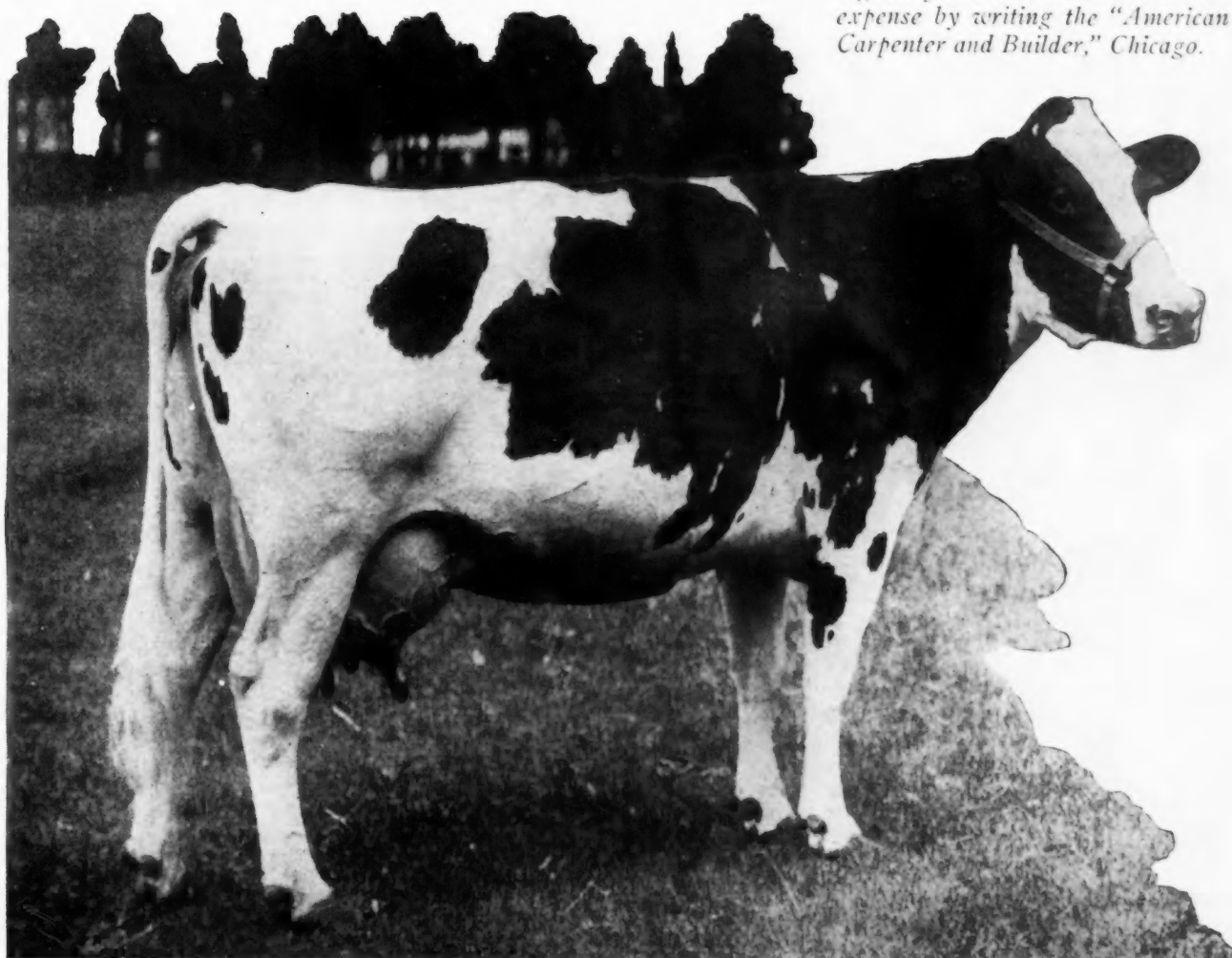
Like the other buildings, it is built on a concrete wall, but there is one feature about the construction which should be mentioned, and that is the manner in which the bottom ends of the studding are fitted into the studding sockets. This way of fastening the building to the wall saves using a wooden sill, and it anchors each stud firmly to the wall, which makes a cheap solid building that resists the winds as well as a heavy one.

This shed is covered with a prepared roofing, which is inexpensive and easily put on. The roof boards are matched so as to make a smooth, tight, windproof support for the roofing. The lasting qualities of roofing depends a great deal upon the roof boards. Complaints of roofing often are traced to rough roof boards with protruding knots and nail heads, or with holes or cracks. Such roof boards never support the roof in the proper manner.



Detail of Stock Shed, Showing Hay Rack and Feed Trough as Frequently Built.

EDITORIAL NOTE: The model barn plans and details for the Dale Farm have been made as complete and instructive as possible in the limited space available here. Should anyone desire complete blueprinted working plans and specifications for any of these buildings they can be secured at nominal expense by writing the "American Carpenter and Builder," Chicago.



WORLD'S BEST DAIRY COW, "DUCHESS SKYLARK ORMSBY"

In 365 Days Official Test Ending November, 1915, This Holstein-Friesian Cow Produced 1,205.09 Pounds of Butter Fat, the Yield From 27,621 Pounds of 4.3 Per Cent Milk, Surpassing the Former World's Record by 28.62 Pounds of Butter Fat. Such Profitable Farm Animals Are Developed and Made possible Only by Proper Housing and Care in Modern Farm Buildings.

Planning the Winter Hog House

The contractor in talking about the management of the hog department mentioned the necessity for a winter hog house, concrete feeding floor, hog dipping tank, hog wallows and individual hog houses.

The following rules were given by the contractor to insure success with hogs: pure air, good water, clean feed and clean pastures.

Ventilation supplies pure air, a deep well with power pump and a system of water pipes will supply pure water in abundance. A good concrete floor with a waterproof surface graded to lead the surplus away

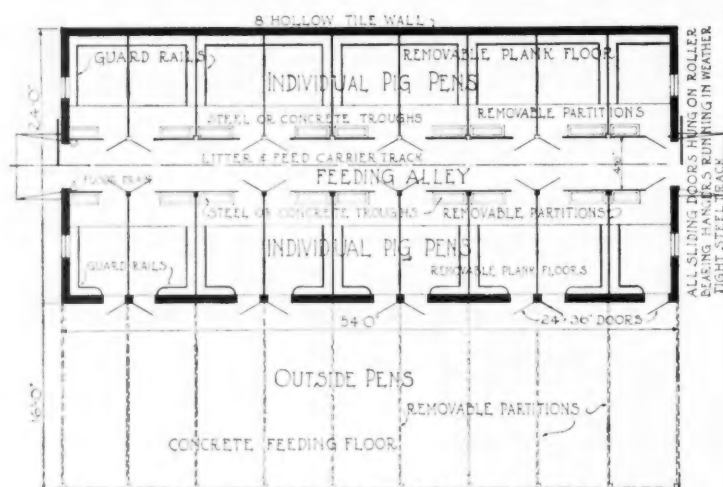
will fix the drainage. A hose attachment will quickly wash the floor, the cement or steel troughs, and force the dirt out of the bottom of the drains. Iron partitions between the pens discourage bacteria, and a combination of these improvements ensures success.

The winter hog house designed by the contractor is shown in the perspective and floor plan. It is made on the saw tooth roof plan with the upper windows placed directly over the pens. The roof plan is worked out to fit the latitude of Iowa, so the sun will shine into the nests at farrowing time both spring and fall.

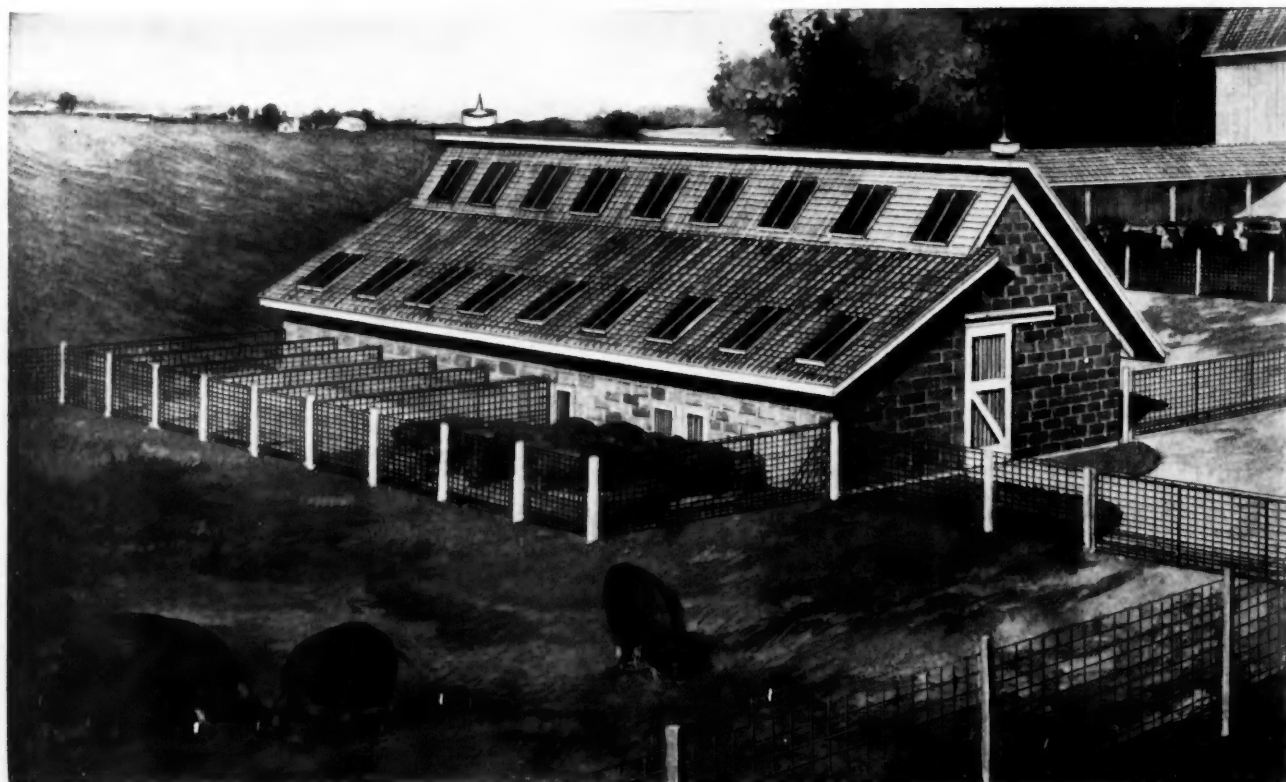
It is 24 by 54 feet in size, built of structural tile on a foundation of concrete. This makes a hollow wall above grade, which is both windproof and dampproof. The concrete floor slopes from the outside walls to the gutters at the sides of the center feeding alley. These gutters drain out at the far end of the hog house and are easily kept clean with a hose.

The equipment inside is made as completely sanitary as possible with steel partitions, manure and feed carriers suspended from overhead racks, feed troughs made of steel for the smaller hogs, and heavy troughs made of concrete for the large sows.

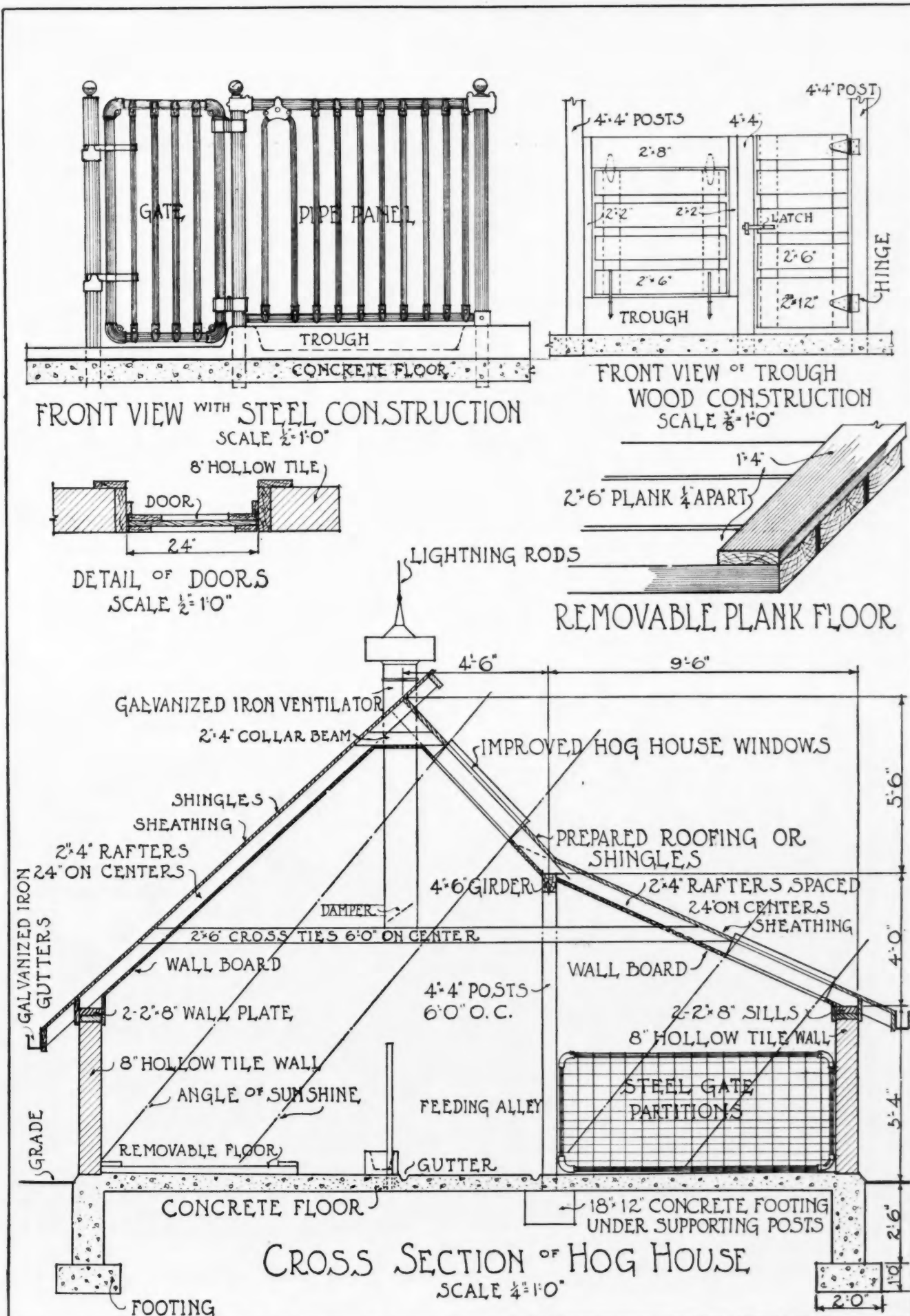
The house is planned and built for easy cleaning and for ease and comfort in doing the work.



Floor Plan of Winter Hog House; Size 24 by 54 Feet, with Outside Pens 16 Feet Deep All Along the South Side.



Photographic Architectural View of Winter Hog House Built of Structural Tile and with Modified Saw-Tooth Roof, Set with Roof Windows. The Average Size Farm Requires, and Should Have, a Snug Winter Hog House of About This Size. When Writing in Regard to This Design, Please Refer to No. A 355.



Details of Winter Hog House No. A 353, as Illustrated on Opposite Page. Face This Building Toward the South, and It Will be Warm and Well Lighted All Winter. Note Details of Sanitary Pipe Panels and Movable Steel Gate Partitions, Which are Becoming Very Popular Among Hog Raisers.

Steel Gates for Hog House Partitions

Mr. Dale wanted the best thing that the contractor could recommend for inside partitions for this hog house. Now the contractor had secured the agency for a steel farm gate, which he had used a great deal in remodeling hog houses, and as they were the best thing he knew of he had no hesitation in specifying them. Inside partitions should, of course, be sanitary and these are made of woven wire fencing mounted on frames of iron pipe. They are considered better than ones made of wood; because no opportunity is afforded for the harboring of disease germs, because there is practically no obstruction of light, and the hogs are always in plain sight of the attendant. A complete pen can be erected or torn down in a few minutes' time. There are also a number of barn equipment manufacturers who make sanitary pens for hog houses and it will pay every carpenter and builder to study up on this construction.

The rear pens are intended especially for sows farrowing late in winter or early spring. These pens are on the north side of the house, protected by the solid tile wall. Each pen is fitted with a movable wire gate and a guard rail to protect the young pigs. Each of these pens opens into the center alley by means of a swinging gate, so it is easy for the attendant to enter any pen at chore time to give the animals proper attention.

The pens on the south side of the house have the same kind of gates opening into the center alley, and there are also outside gates to these pens, which open into the outside runs.

This side of the hog house is intended for mature

animals that need a little exercise. They are fed an ear of corn occasionally in the back end of the outside pens which induces them to make the trip back and forth at frequent intervals.

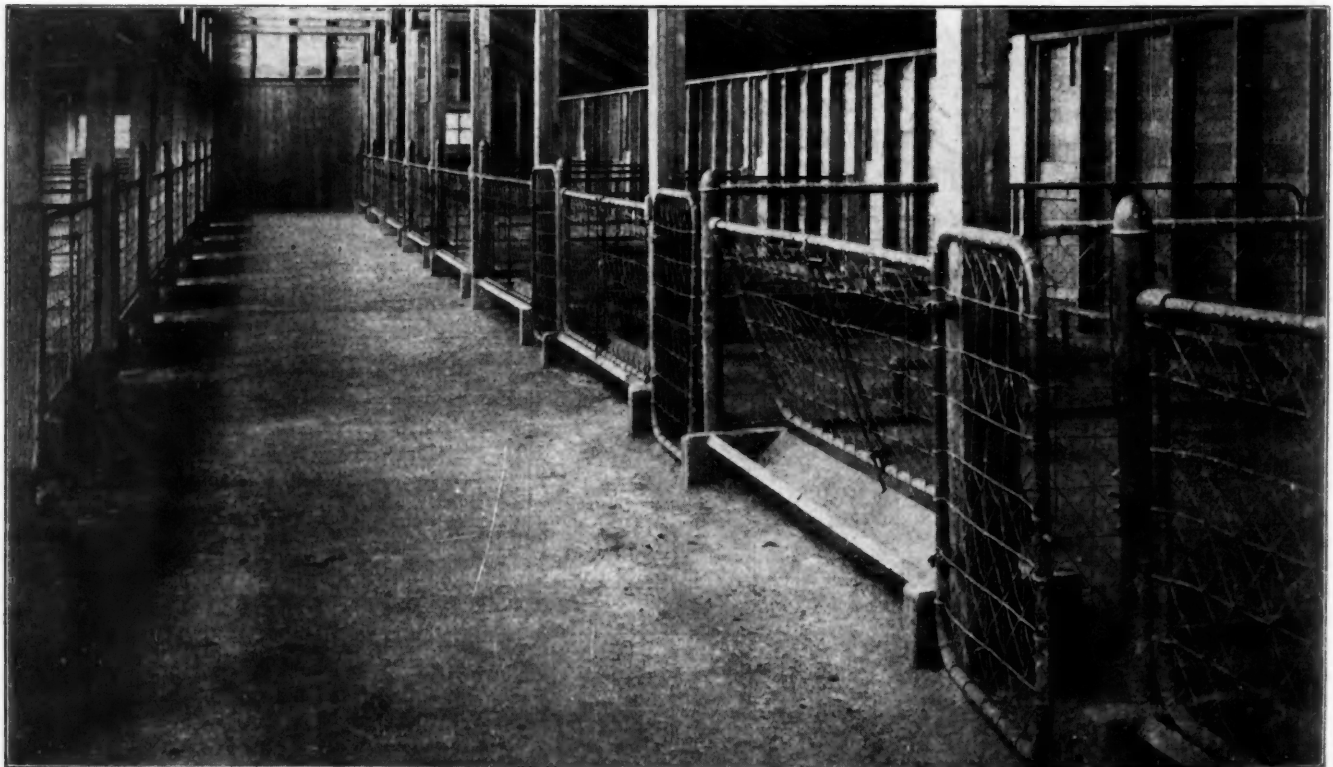
Above the wall the house is made warm by using light building materials. Building paper is put on outside of the studding. Plaster board is used inside, both on the studding and on the rafters. The temperature may be regulated in a house like this when it is filled with hogs, because the walls are made proof against heat and cold.

The contractor's ideas were carried out in a great many details, which included well made hangers for the outside entrance doors, fasteners for all inside doors, an arrangement of levers to open and shut the windows, piping to supply water to the troughs and to the hose for cleaning, and a great many other conveniences intended to save labor and to insure against loss and increase the profits of Mr. Dale's hog business.

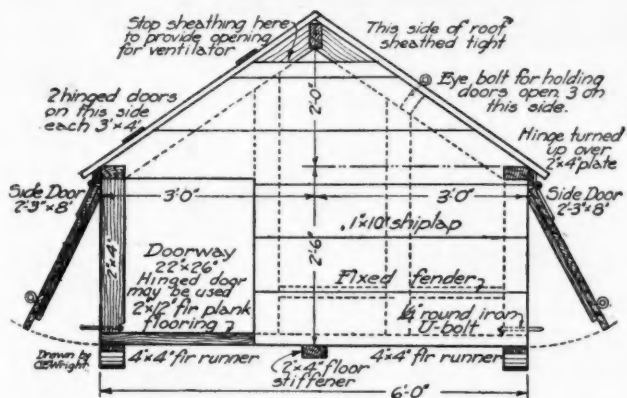
Concrete Feeding Floor

The yards in front of the hog house were paved with concrete. The work was done by first grading the ground to an even pitch which falls away from the house with a drop of about 2 inches in the width of the floor, which is 16 feet.

The concrete is laid sidewalk fashion, by marking off the area with 2 by 4's, making blocks 5 feet square. The lower part of the blocks is made with a thin mixture of gravel and cement. On top of this is a surface made rich enough to turn water. The hog feeding floor is not intended for hard use, so it is neither thick nor expensive, but it answers the purpose splendidly.



"Here is a Photograph in This Illinois Agricultural Experiment Station Hog House Bulletin, that Shows Exactly What I Mean by Removable Steel Gate Partitions for Your Hog House," Contractor Jackson Said. "They are Light, Strong, Sanitary, Very Handy, and Cost No More Than Wood."

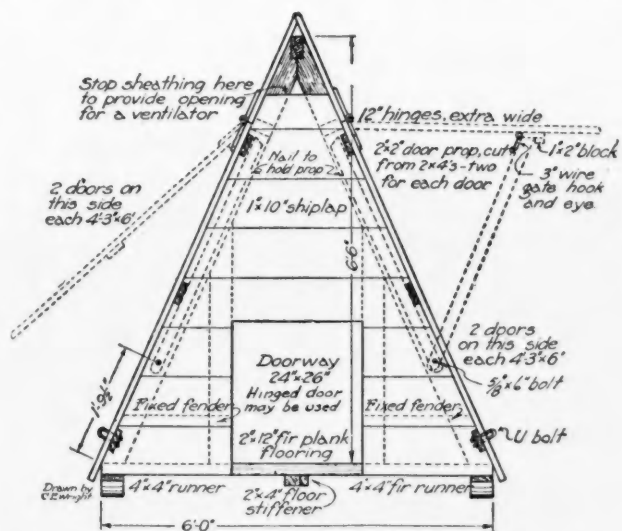


Iowa Gable Roof House. Front End Elevation. If Larger Doorway is Wished, Make Sides Higher.

There is a good wire fence all around the outside stapled to cement posts so that the whole floor is easily kept clean. It is used as a feeding floor and exercising yard for hogs during the fall and spring, and when the weather is mild in winter. In summer and fall the feeding floor is used to finish the hogs for the market. Sometimes a bunch of twenty or thirty will be fed on the floor every day for a week or two and permitted to walk back to the fields between feeds. Later on, say two weeks before shipping, they are confined on the feeding floor and hog house until ready for market. This makes a combination summer and winter hog house.

Individual Hog Houses

Such a complete hog department as the contractor designed for the Dale farm requires a number of small portable hog houses to use in the fields. Sanitary hog



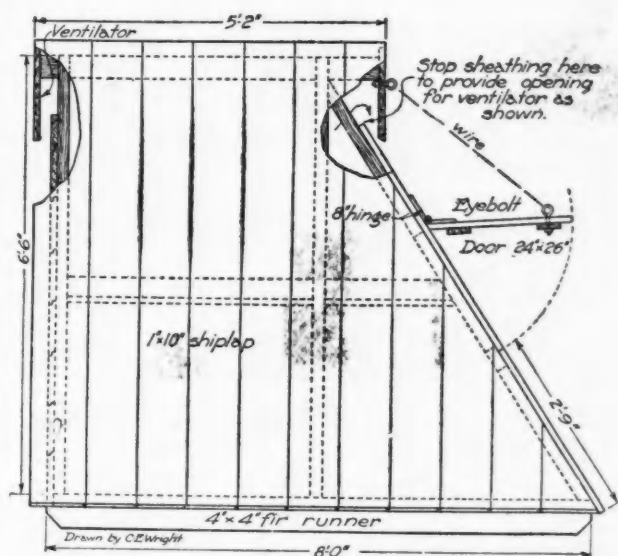
"A" House (Doors Hinged at Top). Front Elevation. Make Doorway Higher for Mature Swine.

raising plans were carried out all thru the different seasons. Winter pasture as well as spring, fall and summer pasture was provided in different fields of the farm to work in with a thoro system of rotation of crops.

Four different types of portable hog houses are

Four Types of Portable Hog House as Recommended by the Iowa State College Agricultural Experiment Station.

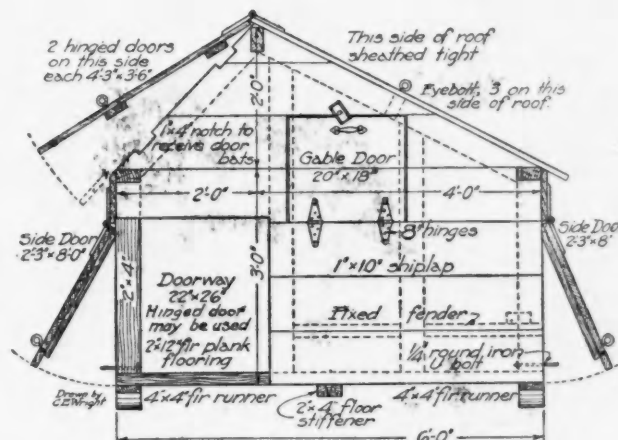
shown in the illustrations. They are 6 by 8 feet, simply made, with shed roofs. They may be hauled away and placed in any field for the accommodation of sows with their litters, or to make sleeping quarters for the older pigs when running on pasture. Six by 8 is small enough, so that a sow with her litter of pigs can keep warm when the temperature outside is below freezing. This size also accommodates about a half a dozen shoats. They need shelter from storms and sleeping quarters at night.



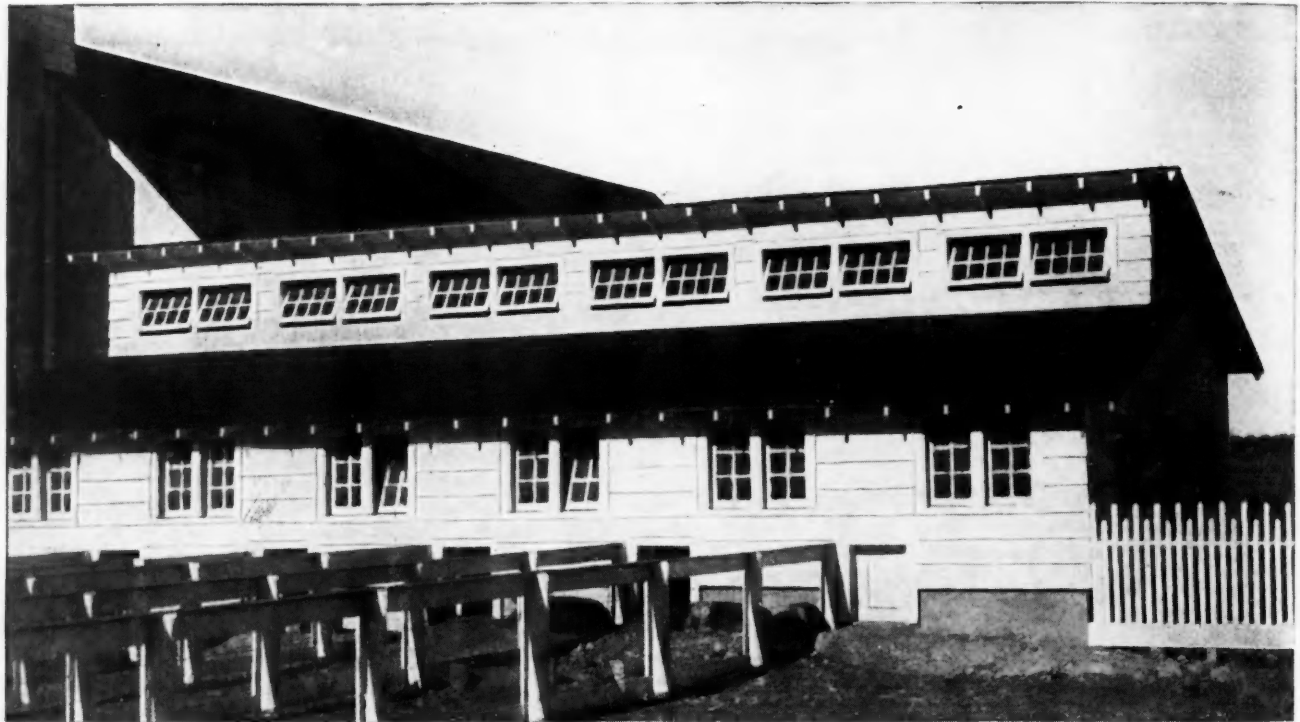
Teepee House. Side Elevation. Size 8 by 8 Feet.

These little houses provide hog comfort under varying conditions. Successful hog men appreciate the value of comfort and are particular to supply it. When these little houses are occupied, there is considerable body heat from the animals which makes ventilation easy.

The principle of ventilation is the same in all kinds of farm buildings, the principle of the circulation of air being that warm air goes up and cold air comes in from a lower opening to take its place. The lower door is almost always open, which supplies the necessary inlet, and the upper door takes care of the discharge air.



Ames Combination Roof House. Front End Elevation.



"Here is Another Type of Winter Hog House, Mr. Dale, which Many Prefer. It Has the Regulation Saw-Tooth Roof, the Upper Windows Lighting the Back Row of Pens, and the Side Wall Windows the Front Row. This is a Wooden Building with Concrete Foundation and Floor."

Hog Dipping Tank

On the north side of the hog house the contractor built a long, narrow dipping tank for the hogs. It is 18 inches wide at the top and 8 inches wide at the bottom, inside measurement. The tank is 20 feet long on the bottom, with a 10-foot approach at each end. There is a smooth incline to lead down into the tank and a corrugated incline to lead out.

The tank is made narrow for two reasons: In the first place, less dipping fluid is needed for a narrow tank, and another reason is that when a hog gets started thru a tank as narrow as this, it cannot turn around.

The length is about sufficient to give the dipping fluid time to soak into the hair and skin of the animal

while it is swimming thru.

A depth of 2 feet is sufficient for the large hogs. It is not filled so deep for smaller ones. The object is to have the dope deep enough to cover the hog all but its nose and eyes.

A portable fence, made in panels, is placed outside of the trough when in use. After dipping, the portable fence panels are fitted over against the lane fence and are wired fast to hold them upright until needed again.

Hog Wallows

To protect hogs from vermin in the summer time, the cheapest and most convenient arrangement is a hog wallow. Where a good many hogs are kept, a number of wallows are necessary.

The contractor built several for Mr. Dale, placing them along the hog lane. They are made of concrete by first digging a pit about a foot deep. The concrete floor is made in the bottom of this by pounding down stones and filling in between the stones with concrete grout mortar. Then the inside wooden forms are put in place and the side walls are raised a foot above the floor. The earth was dug square so as to answer for the outside form. The top of the hog wallow walls were made curb fashion to reach up above the ground about 2 inches to keep out dirt. A 2 by 4 was used as an outside form above the ground.

Even the hog wallows were neatly finished. The forms were made true and the curb for coping was beveled at the edges so as to give a neat appearance and to prevent chipping.

These hog wallows are built along the stock lane at intervals, so the hogs may be admitted from the different fields either by opening the gates or by creeps.

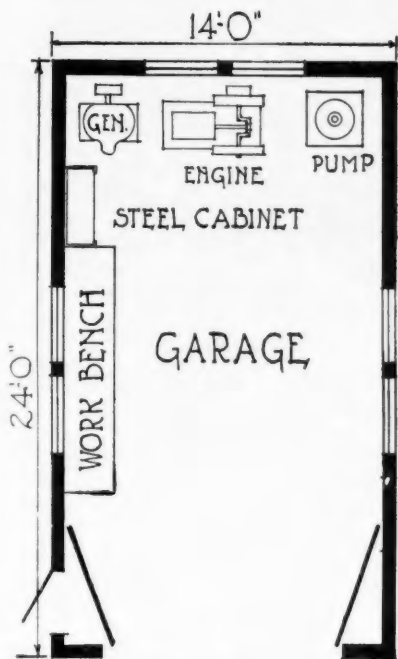


Beef Cattle, if Properly Housed, Are Great Money Makers and Keep Up the Farm Fertility.

Design for Garage and Power House

Power on the Dale farm is one of the important features. In planning the garage and power house provision was made for a good gasoline engine and dynamo to generate electricity sufficient to drive every stationary machine on the farm.

The garage and power house is a fireproof building made with a steel frame covered with metal lath and cement plaster. It is built on a foundation of concrete with a solid cement floor. The building provides storage room for the farm truck and automobile. The workshop contains the engine and a solid work bench with vise and tools suitable for general repair work required around every farm.



Floor Plan.

One feature of the building is the underground storage for gasoline and there is an underground water supply from the general farm water works system which carries

water in pipes to all of the principal farm buildings. Electricity is conveyed by wire from the electric generator to the machines in different buildings. The

garage is the central farm power house that supplies energy and motion to all the different machines.

Concrete Watering Tanks

There are two tanks for watering stock as shown on the farm layout diagram. They are both connected with the farm water works by underground water pipes.

The bottoms of the tanks are connected with the farm drainage system so they may be easily and quickly cleaned.

The water comes into the tank from the bottom and the cleanout discharges from the bottom, so there is no slop work around the tank. The overflow is a simple affair which consists of a length of gas pipe, 16 inches on the ground to fit into the outlet socket in the bottom of the tank. This holds the water within 2 inches of the top of the tank. When the tank is being cleaned, this pipe is lifted out so the tank can drain.

Detail of Improved Pump Jack and Pressure Tank, the Essential Points of a Modern Water Supply System.

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Photographic Architectural View of Garage and Power House, a Fire-Resisting Building of Metal Frame and Roof with Concrete Siding; Size 14 by 24 Feet. Big Enough for Work Bench and Gas Engine Outfit, in Addition to Garage Space. This is Design No. G 159.

Arranging a Good Farm Poultry House

It is easy to raise poultry on a farm and get plenty of eggs in the spring and summer, when time is too valuable to hunt thru the weeds to find them.

The contractor suggested a hen house made snug and comfortable so the hens will lay eggs at four cents

State poultry association, after trying out different plans.

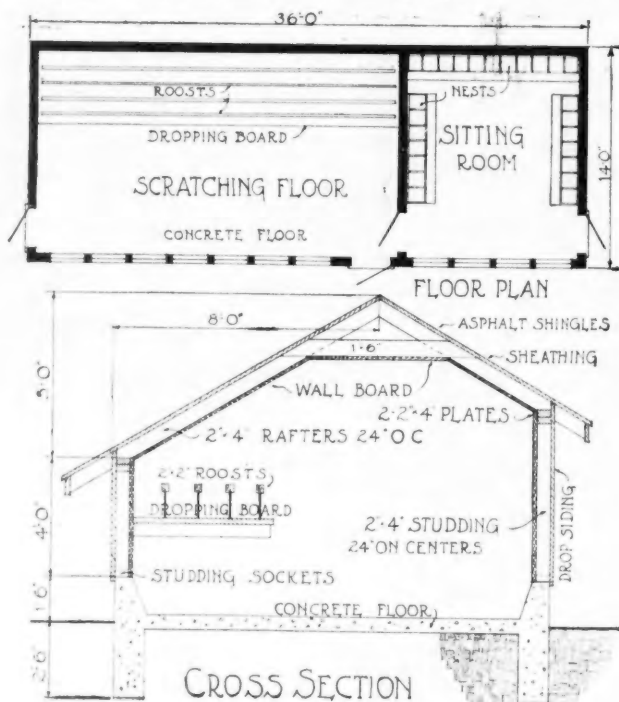
It is built on a wall of concrete and has a good concrete floor, the idea being permanency and sanitation together with protection against rats and mice. After the concrete wall was built, the ground was leveled inside and settled with water, and the floor made by using a 1:3:5 mixture.

Instead of putting on a rich cement surface coat, as usual, the top of the floor was covered about an inch deep with lime mortar made with very fine sand. This mixture is softer than cement and is better for the poultry. There is so little weight on a hen house floor that the ordinary solid concrete construction is not necessary.

The foundation walls extend up 18 inches above grade and about 15 inches above the floor.

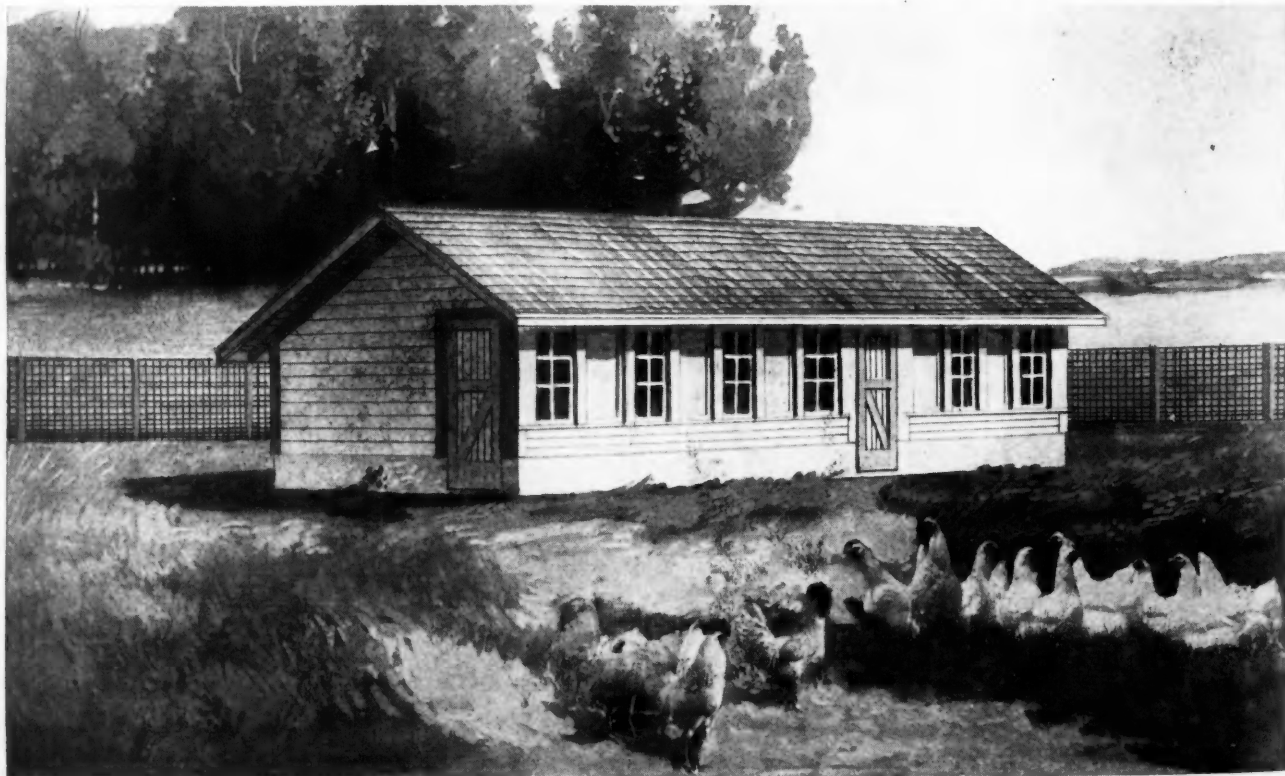
The studding are connected with the top of the wall by using wall sockets which are set in the concrete wall. The space between the studding and the inside wall board and the outside boarding is filled in about an inch deep with fresh cement mortar to prevent cracks for the wind to blow thru and to prevent making a harbor for poultry insects. From the sill up, the outside walls are made double with building paper, both inside and outside of the studding. The roof is finished in the same way. The object is to make a dead air space between the inside and outside boarding and roofing to keep the house at an even temperature.

Ventilation is just as necessary for poultry as for other farm live stock. The principles of ventilation in

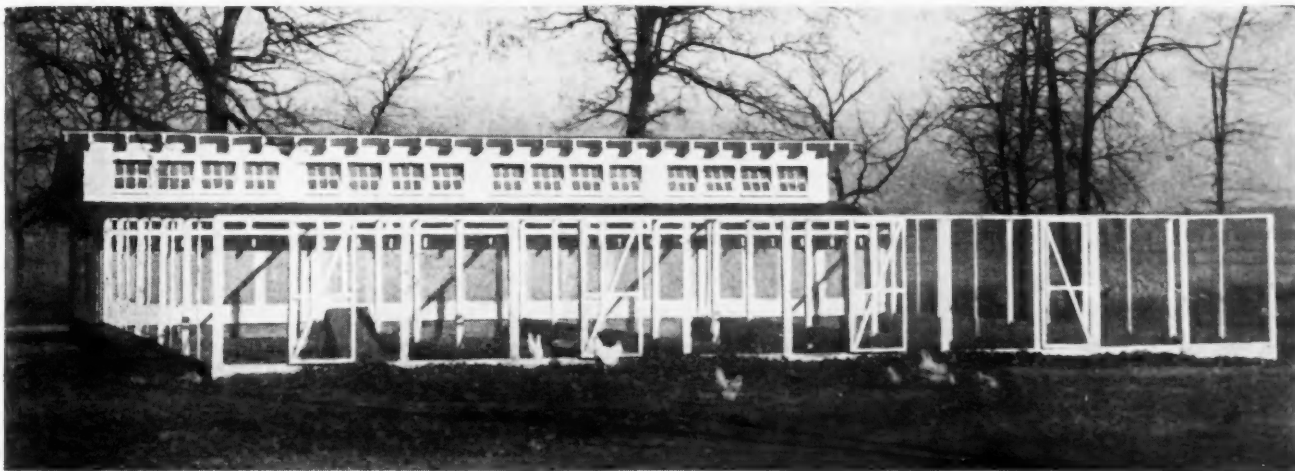


Floor Plan and Detail Sketch of Poultry House.

apiece when the snow is blowing about. He made plans of a poultry house 36 by 14 feet, patterned after a poultry house adopted by the members of a New York



Photographic Architectural View of Poultry House, Planned for Average Sized Farm. A Two-Room House, Size 14 by 36 feet. When writing in regard to this design, please refer to No. A 358.



Type of High-Grade Poultry House with Run Yards Which Farmers Prefer for Real Egg Farming. This is a Saw-Tooth Roof Poultry House, Lighted by the Upper Windows, and Ventilated Thru the Muslin Sash of the Lower Windows.

a poultry house may be the same but the circulation methods are different.

To facilitate ventilation and to get the benefit of the sun, the roof is given a long slant at the back, and a short dip in front, as shown in the perspective illustration. This gives head room for the attendant in the front part with a low roof at the back which is appreciated in the winter time when there is not much heat from the sun.

The front intake ventilators consist of window openings covered with very thin cotton. Cheese cloth is recommended as being thin enough to admit both air and light, and it is thick enough to prevent a draft.

The inside of the house is divided into two rooms; the larger room is the general scratching shed, and the smaller one is the nesting room.

Both rooms are supplied with removable hen furniture, so that everything inside of the walls may be lifted off and carried out-doors for cleaning. Lice and mites are so troublesome in poultry houses that facilities for keeping the place clean are absolutely necessary.

For the same reason, the inside of the poultry house is lined with wall board which is cemented at the joints, and the whole surface is painted carefully with three coats of thin paint, thoroly rubbed in to fill every crack and to cover every rough place that could possibly make a hiding place for vermin.

In this plan there are three outside doors for convenience in feeding the flock and cleaning the house. The door to the west should be fitted with weather strips and kept shut most of the time in winter.

Planning and Building the Two-Story Corn Crib and Granary

Next to a modern dairy stable the new two-story corn crib fitted with improved elevating machinery is the most scientific farm building.

The contractor designed and built for Mr. Dale a combination corn crib and granary, 26 by 40 feet. It is 18 feet high to the eaves, with corn cribs at the sides and grain bins overhead in the center. Mr. Dale says it saves wastage, ratage and losses from storms and dampness; and it saves labor.

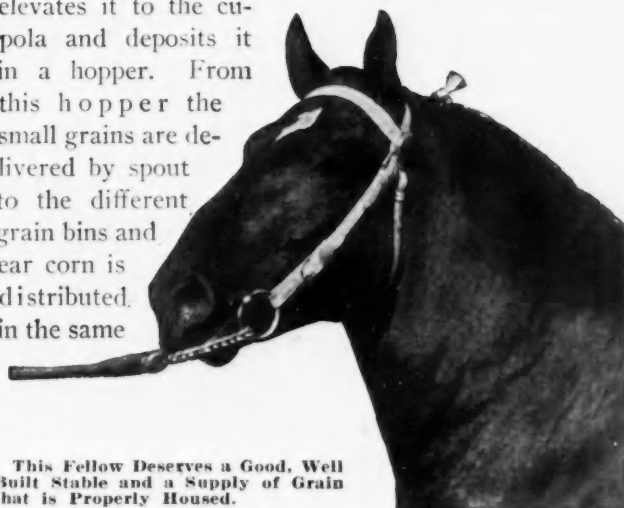
The builder studied the weight and side pressure of different kinds of grain, then applied his knowledge of the strength of building materials and skill in putting them together to resist the strain without using any heavy timbers, nor more planks and lumber than necessary.

There is a driveway 10 feet wide thru the center, leaving 10 feet of head room.

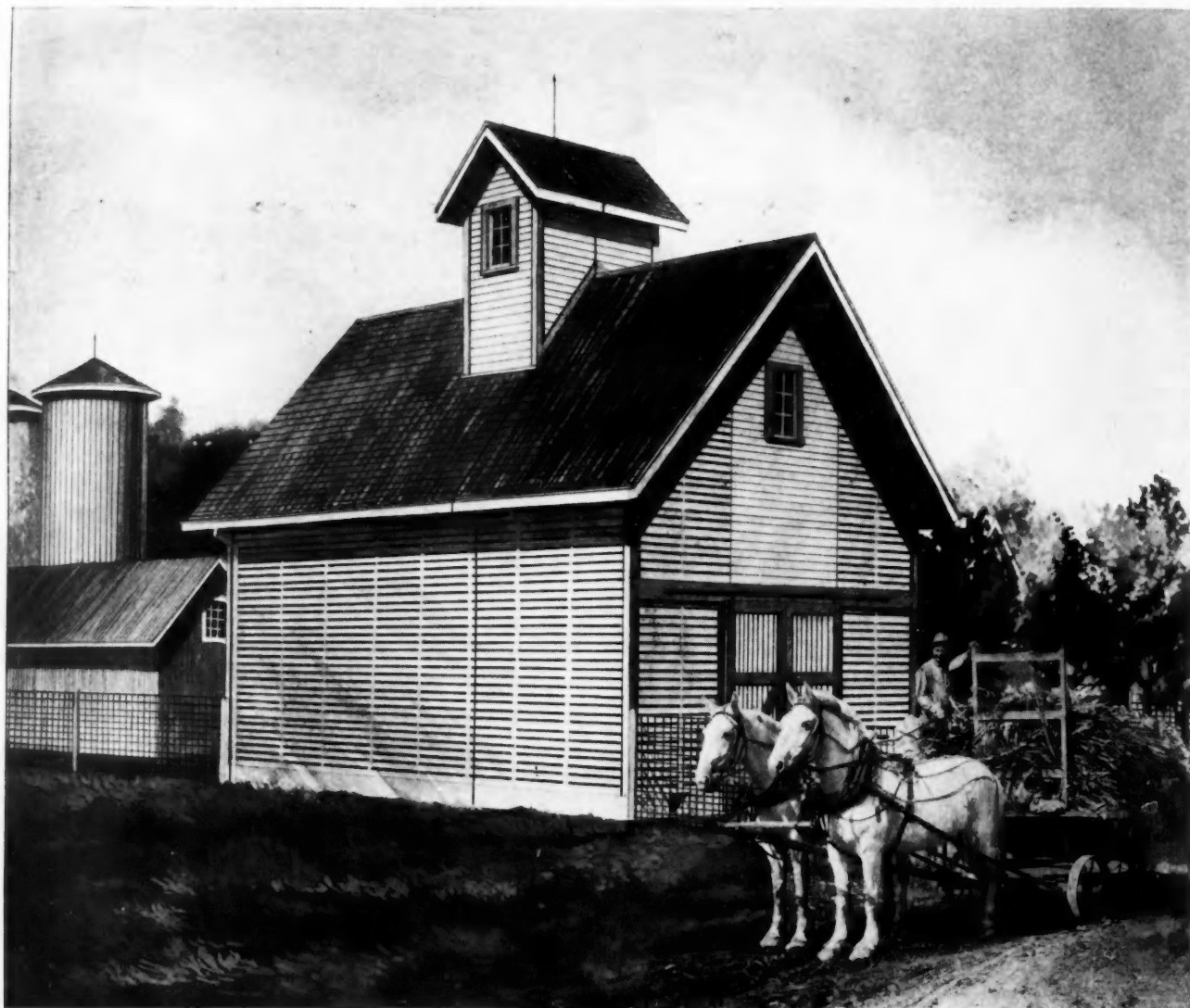
This driveway is a work room in winter. In summer and fall it is an entrance way for loads of ear corn from the husking, and small grains from the threshing machine. Between seasons it answers for storage for farm wagons that are in use a good deal.

It is a place for the fanning mill in winter and a storage room at all times. Grain is spouted down to the fanning mill, cleaned, graded and spouted back to the bins by machinery.

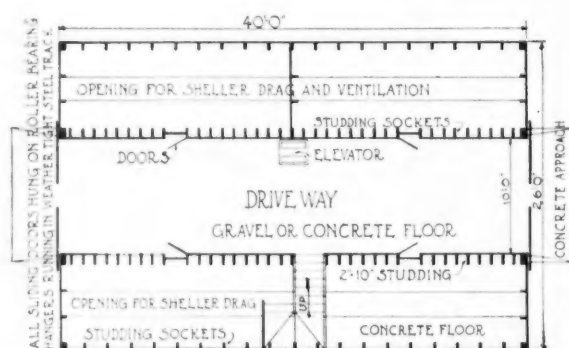
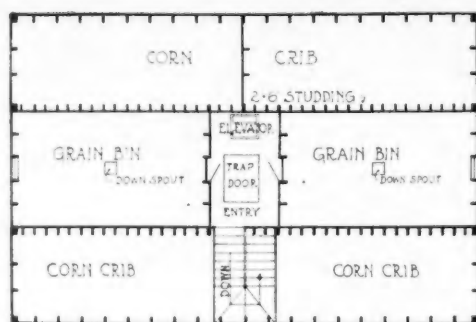
A cup elevator is built in the center of the building which takes grain from the boot on the floor and elevates it to the cupola and deposits it in a hopper. From this hopper the small grains are delivered by spout to the different grain bins and ear corn is distributed in the same



This Fellow Deserves a Good, Well Built Stable and a Supply of Grain that is Properly Housed.



Photographic Architectural View of Modern Two-Story Corn Crib and Granary Designed for Average Size Farm. This Building is Equipped with Inside Cup Elevator for Putting in Grain, and Drag Line for Taking it Out. Design No. A 356.



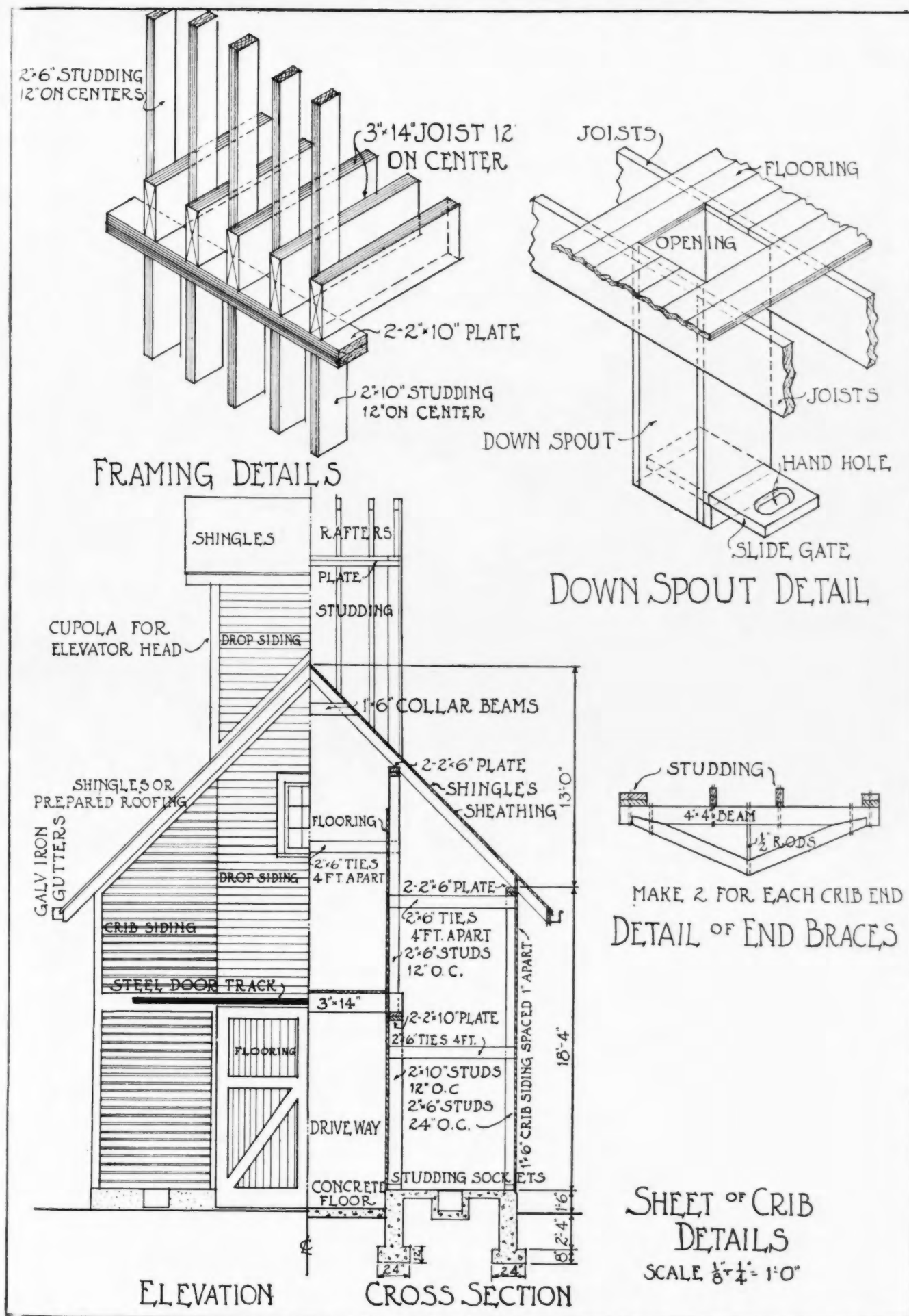
Ground Floor Plan and Second Floor Plan of Modern Corn Crib and Granary. Size on the Ground 26 by 40 feet.

way to the different parts of the corn cribs.

A little extra pains were taken in laying the foundation. The wall extending around the outside is made solid with good footings and two cross walls thru the center under the joists that support the grain bins overhead. It is this center part that carries the load. Grain is heavy so that provision was made accordingly.

The corn crib sections are made of light material thoroly braced from the heavy center construction, so the building when finished is all solid together at the least possible expenditure for material.

Metal sockets are used to hold the feet of the studding because sills would be in the way of handling the grain. The idea is to have the floor level and smooth clear across both sideways and lengthways for ease in getting the grain from any part of the building to the elevator. The outside studding are 2 by 6 inches, 18 feet long, placed 24 inches on centers. Inside studding which support the grain bins are 2 by 10, placed 12 inches on centers and some are doubled.

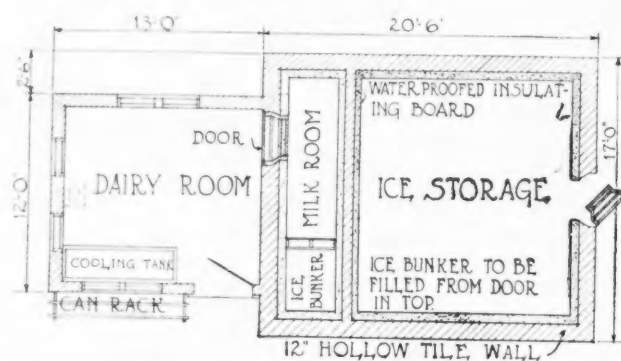


Details of Construction of Modern Two-Story Corn Crib and Granary, Design No. A 356, as Illustrated on the Opposite Page. Note Extra Heavy Frame Work Required to Hold Up the Huge Concentrated Weight of Grain When Filled.

The Farm Ice House and Milk House

The contractor and his farmer client looked up the building of small ice-houses for farm use, and decided upon a combination ice-house and dairy, as shown in the illustrations.

A farm ice-house need not be expensive nor elaborate in any way, and it is not necessary to have it very large, but it should be neat and attractive in



Floor Plan Diagram of Ice House, Size 20 feet 6 inches by 17 feet, with Milk Room Addition, 13 by 12 feet.

appearance, and large enough to hold sufficient ice to last all summer.

Keeping ice on the farm is so simple that anyone can easily succeed the first time trying. Insulation is

necessary, but the elaborate air-tight air chambers, so often advocated, are not necessary for farm use. Drainage is the first specification when starting an ice-house; it is secured by selecting a site high enough to drain away easily in the spring when the ground is full of water. Drainage was easy for Mr. Dale, because of connecting with the regular farm drainage system.

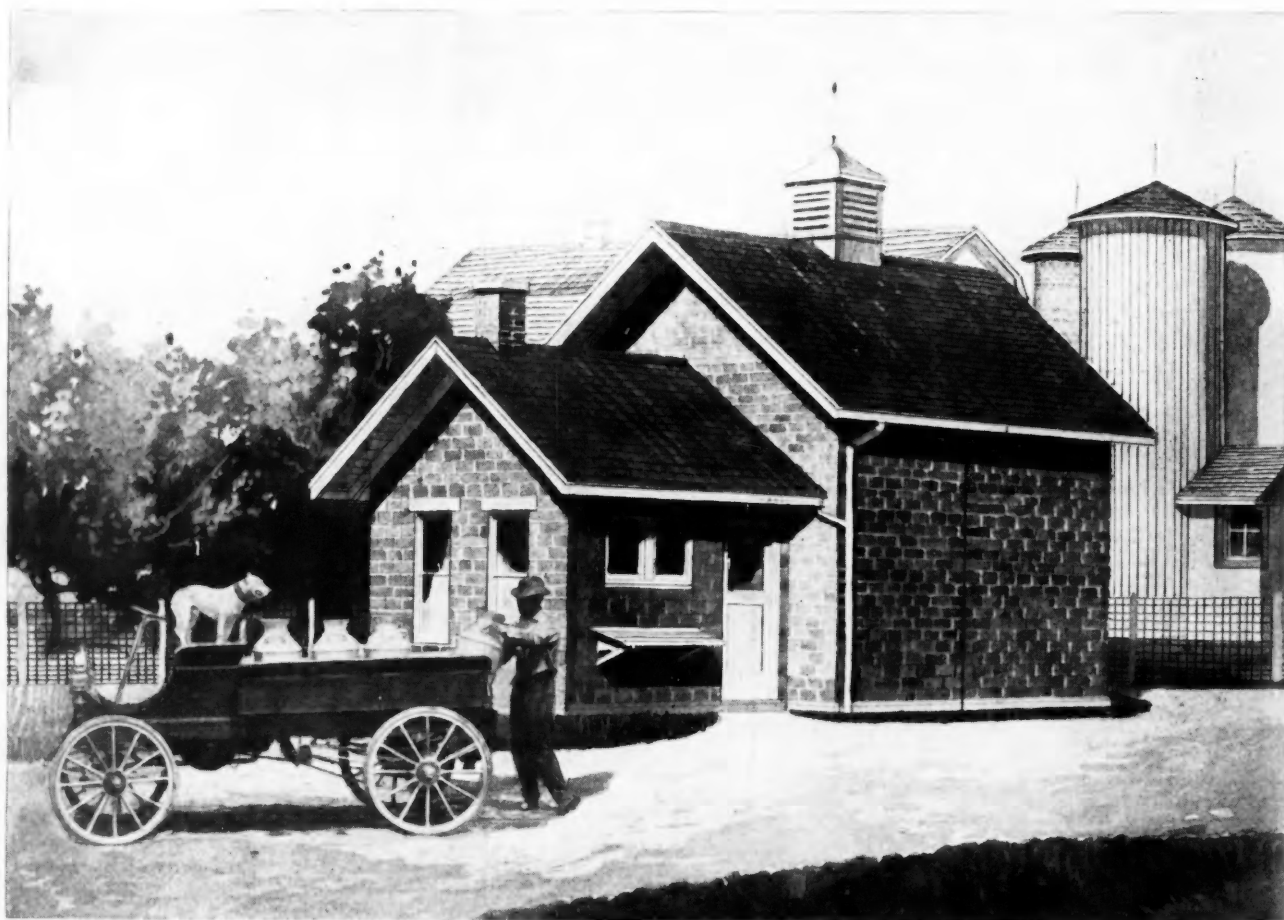
This ice-house is made with hollow tile, started at the top of the concrete foundation wall. The hollow chambers in the tile prevent the heated air from penetrating into the ice-house.

Continuous doors for easy filling extend from the concrete wall almost to the peak of the building, so that ice can be put in or taken out at any level.

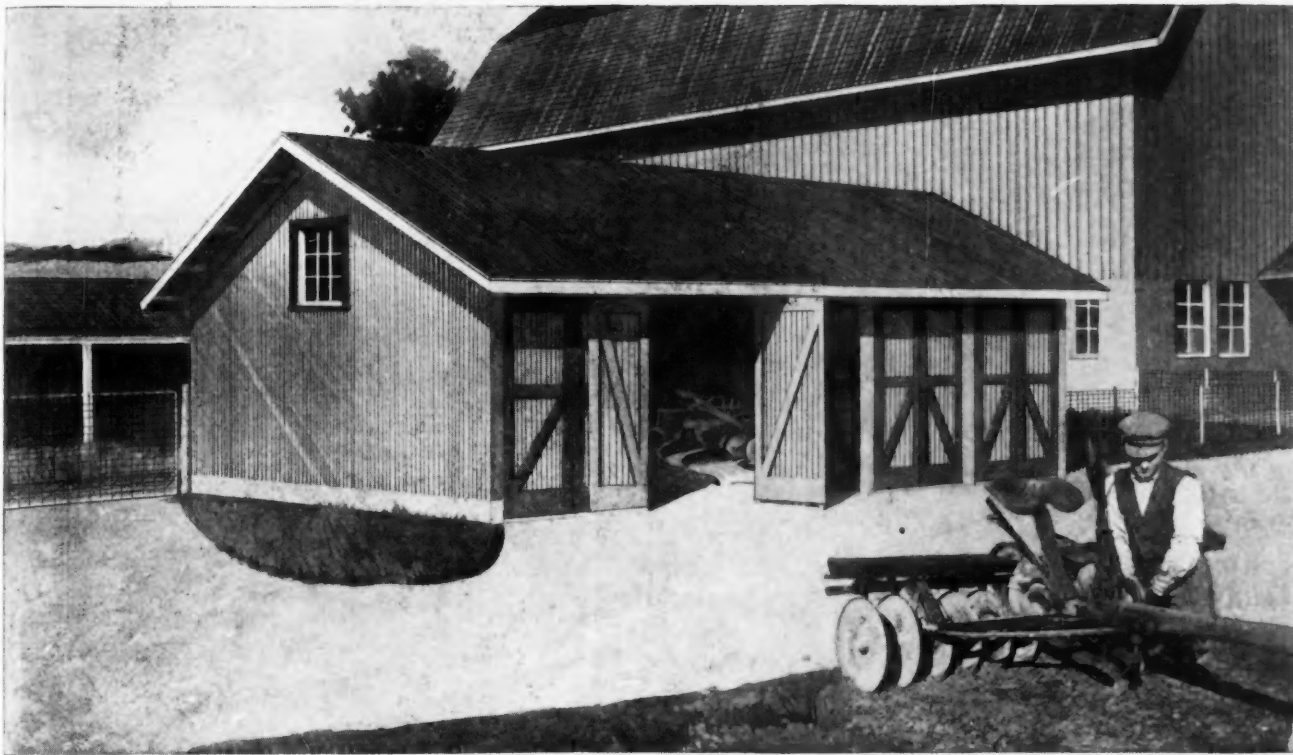
In addition to the insulation furnished by the hollow tile and the double doors, the ice is covered with sawdust, or straw that has been put thru the cutting box.

The keeping of ice depends on drainage, insulation and having a sufficient quantity of ice together in one solid mass to preserve a temperature somewhat below freezing. A cube of ice 12 feet in thickness is sufficient to last all summer in a house of this kind, and furnish a daily supply for home and dairy use.

With good management there is likely to be two or



Photographic Architectural View of Combined Ice House and Milk House. Designed for Average Size Dairy Farm. Building is Constructed of Hollow Clay Tile Insulated with Waterproofed Insulating Board. Design No. A359.



Photographic Architectural View of Implement Shed; a Substantial Building of Corrugated Iron. The Front Wall is All Doors—a Handy Arrangement. When Writing in Regard to This Design, Please Refer to No. A 357.

three tons left over in September that may be disposed of.

The dairy house being in connection with the ice-house is another labor-saver. In some states the dairy laws require that the milk shall be kept at a distance from any stable, so that this plan of building the dairy house across the lane from the cow barn will answer every requirement.

Planning the Implement Shed

Details of the "Best Paying Building Investment on the Place."

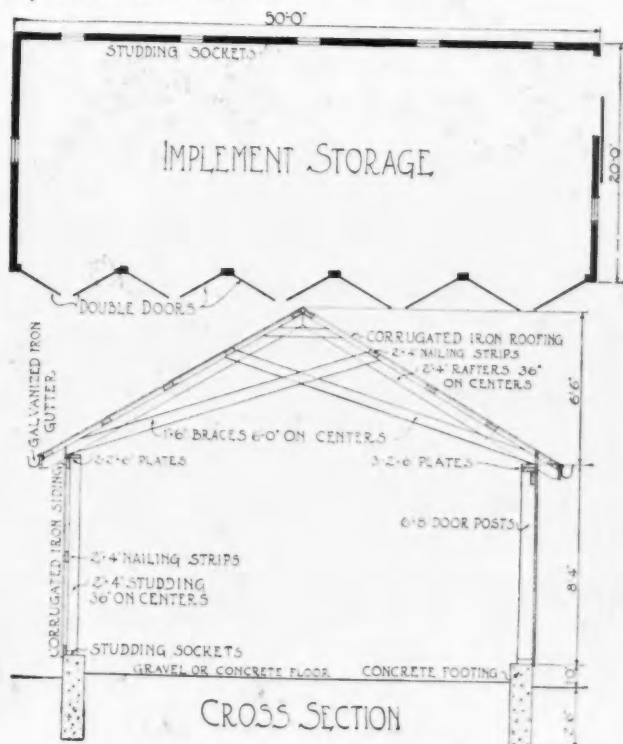
The implement shed, while it serves the purpose, is inexpensive. But it shuts tight against wind and rain and poultry. It is built of corrugated iron on wooden framework. It is large enough to house all of the farm machinery when not in use.

A strict rule regulating the farm requires that every machine shall be put into the implement shed as soon as the field work is done. It is intended to establish the habit of taking good care of the farm equipment.

The building is made with a watertight roof and windtight sides clear down to the ground, leaving no opening for the wind. Practically the whole front is

made of doors, which open out or shut together in pairs. This plan does away with the necessity of running out several machines or implements to get at one packed away at the back. For the same reason the shed is made long and narrow, which gives greater access to the contents.

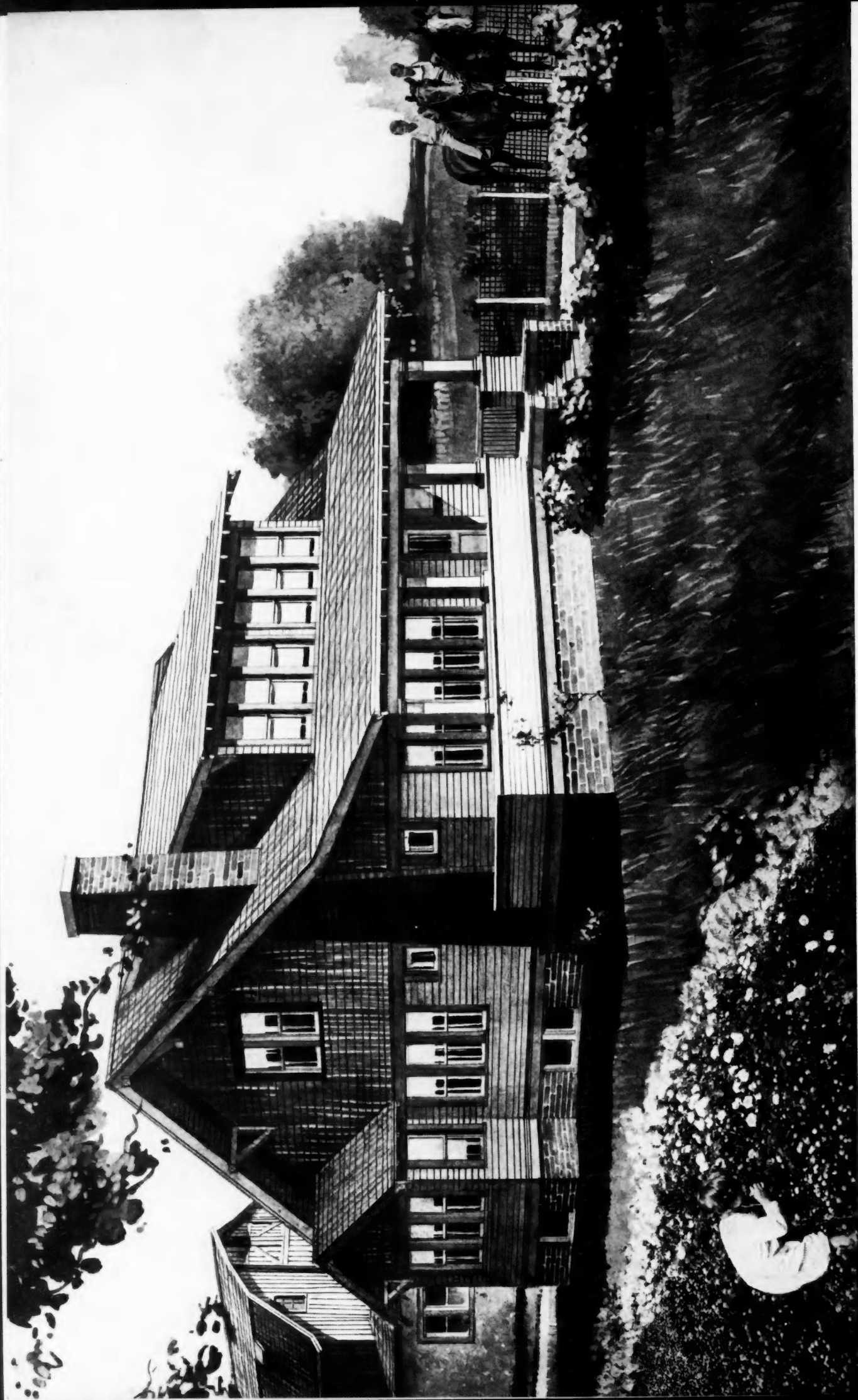
Doors made in this way are more liable to get out of order than one pair of doors in a building that is otherwise solid. For this reason extra bracing is provided which ensures the opening and shutting of any door when required.



Floor Plan and Construction Detail of Implement Shed as Illustrated Above.



"You Need Have no Hesitation About Using Corrugated Iron for our Implement Shed," said the Builder. "Here is a Photo of an entire Group of Farm Buildings Constructed of It."



Photographic Architectural View of Model Farm House Designed Along the Latest Bungalow Lines, and Containing Those Special Features of Interior Arrangement that a Real Farm House Requires. For Floor Plans and Interior Details, See Pages 87 and 88. When Writing in Regard to This Design, Please Refer to No. 6772.

Farm House of Cosy Bungalow Design

NINE ROOMS ARRANGED WITH SPECIAL REFERENCE TO FARM NEEDS

The great advantage of the room arrangement shown in this model farmhouse lies in the fact that the living quarters and living rooms of the family are separated from the rooms that are used by the hired help. This arrangement applies both to the first and second floors. This idea was recently brought into prominence by the Minnesota State contest for prize farm house designs. Each design had to incorporate this arrangement in some way.

From the back porch the entrance leads to a wash room where the men coming in from their work can clean up, without going into the kitchen and interfering with the cooking. It is not necessary for the men to go into the kitchen at all, as they can go directly to the dining room from the wash room. A case is provided in which the men can hang their outside work clothes.

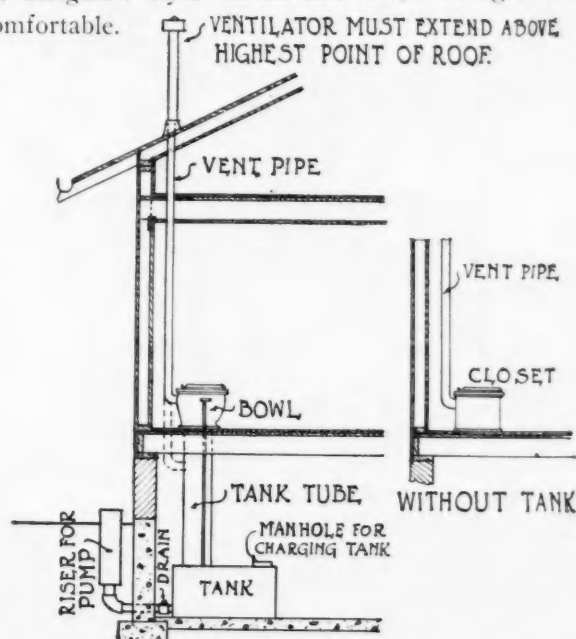
Two bedrooms are provided for the help on the second floor. These can be shut off from the rest of the upstairs by closing one door in the large bedroom that leads to the back hall. The family occupy the other three rooms on this floor and reach them by the front stairs, while the back rooms are reached by the back stairs.

On the first floor one of the back corners of the house is fitted up as a farm office—the farmer's private room for the transaction of the farm business. In these days of scientific farming, the guessing system is as useless as it would be in any other kind of business. There must be filing systems and records that are kept on costs and all the various other details of a business. The farm office is located so that the owner or manager can see all the buildings from this room thru the windows on the three sides.

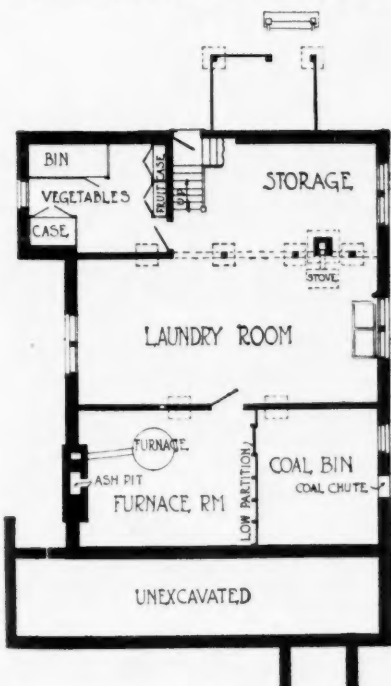
The kitchen and dining room are connected by double folding doors which can be opened so that the table can be stretched away out long and placed between these rooms at threshing time, silo filling, or for the big Thanksgiving dinner, when all the folks are home.

A feature of the basement arrangement is the large space that is provided in one corner for the storage of fruits and vegetables. This is placed away from the furnace and the laundry stove, and is shut off with a solid masonry wall.

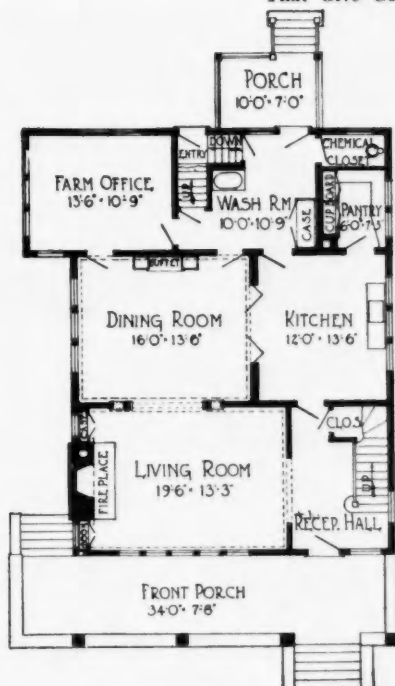
In exterior design this farm house follows the popular bungalow style—broad and low, well-lighted and comfortable.



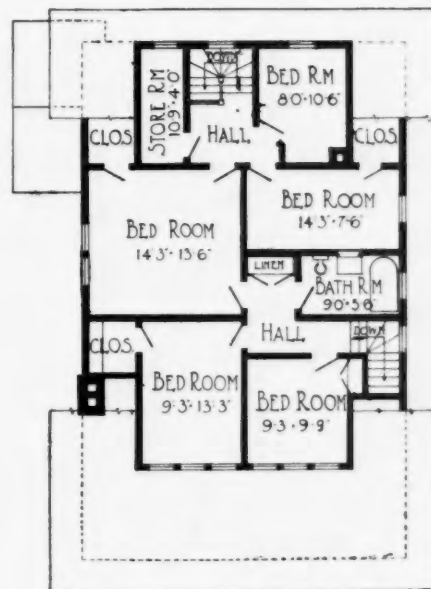
The Builder Recommended a Chemical Closet for the Toilet Off the Wash Room; Said There Are Several Kinds That Give Good Satisfaction When Properly Installed.



Cellar Floor Plan.

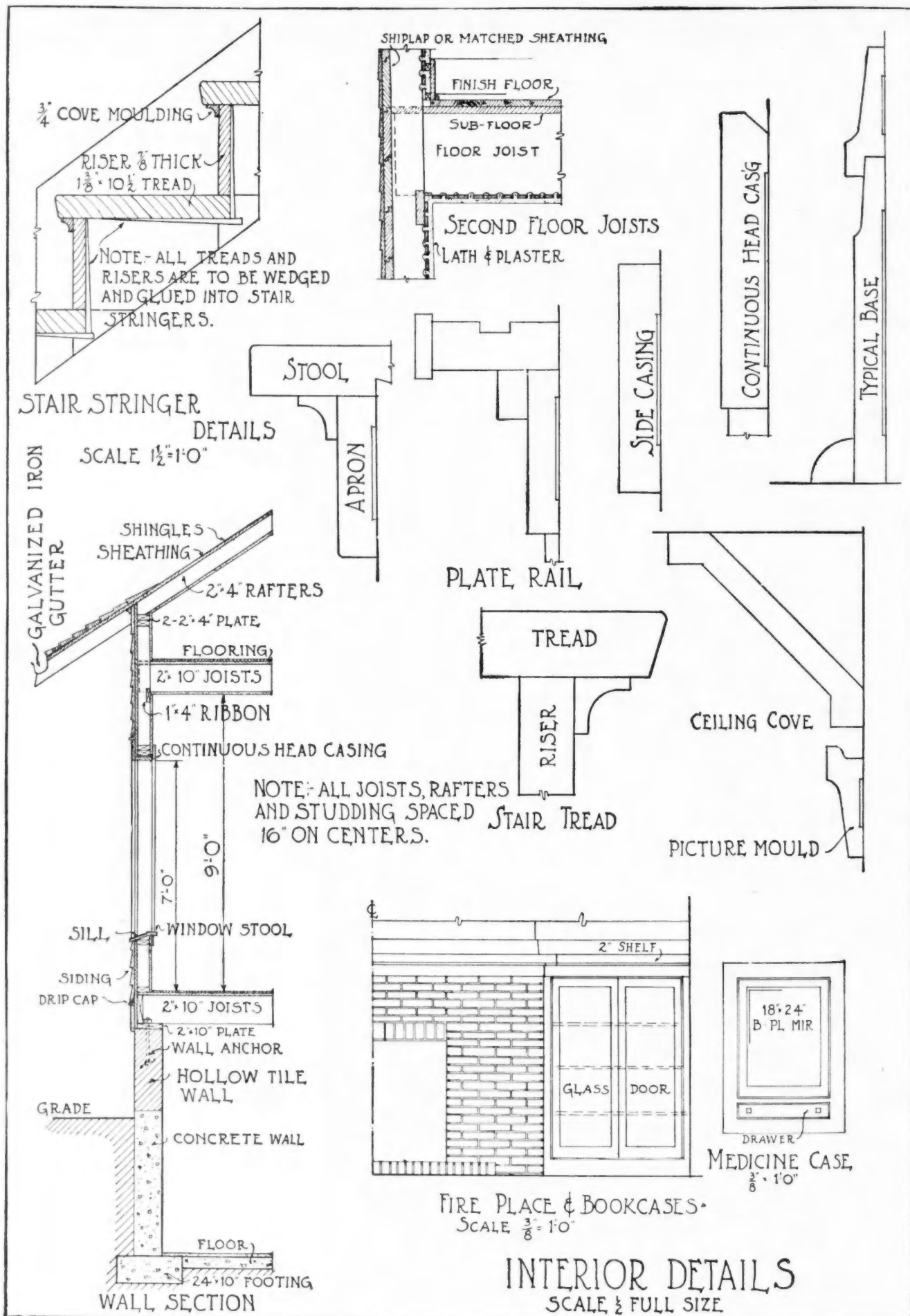


First Floor Plan.



Second Floor Plan.

Arrangements of Nine-Room Farm House, Size 30 by 39 Feet 6 Inches, as Illustrated on Opposite Page. Design No. 6772.



Scientific Dairy Barn Ventilation

THE ESSENTIAL PRINCIPLES OF THE SYSTEM EVOLVED BY PROF. KING AND THE LATER DAY IMPROVEMENTS ON IT

By L. Klima, Barn Ventilating Expert

THOUSANDS of good dairy cattle are working under the very heavy handicap of a damp and poorly-ventilated barn. When the dairy cow is out on the pasture she is afforded an unlimited amount of fresh air that contains the oxygen she needs and her milk flow is large; grass is plentiful and many think that this is the only cause of her increased flow of milk; as a matter of fact, the unlimited supply of oxygen is as important as the food she is eating.

Many dairymen wonder why their cows do so poorly, when housed in winter, in spite of the utmost care and the well-balanced ration placed before them; the answer is, the ration is not well balanced for the lack of a sufficient amount of oxygen.

The Straw Shed Versus the Modern Barn

Before the advent of the barns, built to retain the heat and exclude the cold, cattle were allowed to roam in the open air all winter with no shelter other than a straw shed, or the like, which acted as a wind-break during severe storms.

In handling the dairy cow in this manner our forefathers seldom made any money, it must be remembered, however, the cows were generally healthy and tuberculosis in cattle was unknown.

The Doctor's Advice

The medical profession, learned in their science, advise members of the human family to live, eat and sleep in the open air; if this is good advice for the human, why not for the animal creation?

It makes no difference how well a dairy cow may be cared for; how well balanced her ration of food, or how well she may be exercised, if the barn in which she is housed is not properly ventilated.

The purity of the atmospheric conditions in the barn should approach as near as possible the ideal, as represented by the open air; at the same time bearing in mind that the temperature of the barn must remain comfortable.

Fresh Air and Light

Fresh air and light, added to a balanced ration of nutritious food, are a vital necessity and the cow of good constitution and pure breeding under such favorable conditions can do her best.

There are more than 450 cows in the United States that are producing forty pounds and more of butter at per week. It would be impossible for any of these cows to reach a maximum of their producing efficiency unless supplied with an abundance of fresh air, good light and warm stabling.

Heat has a definite value to the owner of stock because it produces easy conditions in which the dairy cow may produce more milk.

The problem before the students of ventilation to-

day is the one of supplying fresh air in sufficient abundance while retaining enough heat in the barn to avoid the necessity for an artificial heating device in extreme cold weather.

It must always be kept in mind that the heating of the barn depends upon the herd of stock housed therein.

If the cubic dimension of a barn room is too large for the herd, the heating plant of that barn is inadequate.

In a cold climate the average dairy cow should not be expected to heat a greater volume than 550 cubic feet of air in a room properly ventilated.

A well ventilated barn means a good profit for the owner. If it is not properly ventilated it is very likely to be wet and sour. In this condition the building and contents will quickly decay and the stock is unhealthy.

Because fresh air has a food value it should be kept in sufficient quantity the same as other food.

In a poorly ventilated barn during the warm season, doors and windows may be opened to allow a current of air to pass thru and carry out the foul air; however, in damp, chilly weather, if doors and windows are opened, there is always danger of distemper.

In bad weather during the warmer months, the stock can be kept dry, cool and comfortable in a properly ventilated barn. This is certainly very profitable to the owner and humane to the stock.

During the winter a tight, well-filled barn is necessary to hold the heat and keep the stock comfortable: without this ideal in view, the money spent for the modern barn would be a waste to a large extent.

If good health only is to be considered, leave the dairy cow out in the open with a good wind break to protect her from the storm and she will be much healthier than in a tight, unventilated room full of lurking disease germs.

Certain facts must be considered in the application of a ventilating system to the modern barn.

1. Heated air expands and rises, while cold air is contracted and settles.

2. Oxygen, the principal air ingredient, is lighter in weight than carbonic acid gas, which is present in large quantity in exhaled breath.

3. Carbonic acid gas mixing with moisture, accumulating in an unventilated room, is the heaviest air and the hardest to move.

Unsuccessful Theories Versus Successful Practice

Different theories have been advanced for the successful ventilating of the dairy barn, but the King system has proved the most practical.

A system properly applied should have as full control as possible of the air space to be ventilated; to secure such control the air must be kept continually

circulating in sufficient volume out thru the foul air flues and in thru the fresh air intakes; a reversal of this circulating air movement will destroy the value of the system because, if the air at the ceiling moves thru the fresh air intakes, the heat is lost and the temperature of the barn cannot be controlled.

The successful operation of the system originated by Prof. King, of the Univ. of Wis., will depend upon the right relation of many details, but, for the purpose of this article, we lay special emphasis on two of these things which are classed under the head of the Motive Power.

Motive Power

Two elements contribute to this motive power, heat and air pressure. The animal in the barn is the unit that generates the heat; this unit is constantly throwing off heat in excess of the bodily needs, the heat expands the air and causes it to work its way out thru the openings.

A very important source of motive power, however, is the air pressure on the outside of the building.

The movement of air thru the flues increases in volume as the velocity of the wind increases, and to those who have been making a study of the application of this motive power, a later experience has developed a third unit of value to the King system; the purpose of this unit is to give needed additional suction thru the motive power of the wind blowing across the roof.

There are many ventilating systems now in use that would be greatly improved if they were supplied with a mechanical device that would keep the system under control, which would produce a forward movement of the air all the time and eliminate every possible opportunity for a back draft.

Barn owners who have systems installed often notice this back draft and have no other way to stop it except to choke the flues which, of course, destroys the value of the ventilating system.

Professor King devised the foundation of the system which bears his name, this in itself was a great achievement. Others have taken up the work where Prof. King laid it down and have brought it to its present stage of perfection.

The up-to-date King system consists of three units: fresh air intakes, foul air flues, and a third unit, or device, standing on the highest point of the roof at the head of the foul air flues.

The Aerator or Cupola

The wind that blows across the aerator on the roof is the motive power that produces the suction that draws the air from the barn floor thru the foul air flues and the air pressure outside of the building induces a flow of fresh air thru the intakes to replace the foul air passing out.

If properly made, the aerator is a very important addition to the system; it reduces the tendency for back draft and greatly increases the suction of the entire system.

Intakes and Foul Air Flues

The location and size of the intakes depend upon the size of the barn and the capacity of the barn room, their construction depends upon what materials are used in the construction of the building and the way the stock is arranged in the room.

The intakes must be made long enough to trap and hold the heat in the barn and not permit a back flow of air thru them.

The fresh air should be brought into the room at the ceiling in a manner that will not allow a cold draft to strike an animal, and the cold air should be held to the ceiling as long as possible so it will properly mix with the heated air before settling to the level of the stock.

The outside opening of the intake should be covered with a coarse screen; the inside opening must be covered by a door that is arranged to give full control to the inflow of the cold air.

The foul air flues must extend from the floor of the barn up thru the loft and the top of the flue must extend above the highest point of the roof.

Air moves in circles and the faster it moves the more pronounced its whirling motion. The air that passes thru a ventilating flue is usually in the form of a circle and therefore the flues should be made inside so that it would be as smooth as possible so as not to retard the flow of this air movement.

Details of Construction

Several important details must be observed in the construction of a flue to convey air loaded with moisture. 1. The flue must be air tight, a leaky flue is useless for this purpose.

2. It must be as nearly rot or rust-proof as high grade material and competent workmen can make it.

3. Each flue must be of proper size and there must be a sufficient number to meet the needs of the barn.

4. They must be placed in the barn properly to secure the maximum result.

In order to get a ventilating system properly installed in a building it is advisable to consult an expert along this line. A heating plant should be installed by one who understands the proper method of heating; a lighting system should be installed by one who knows the principles of securing the best results with this kind of work, and as a heating plant and a ventilating plant both consist of only three units, you can readily see that a ventilating system can be only as successful as the plan by which it is installed.

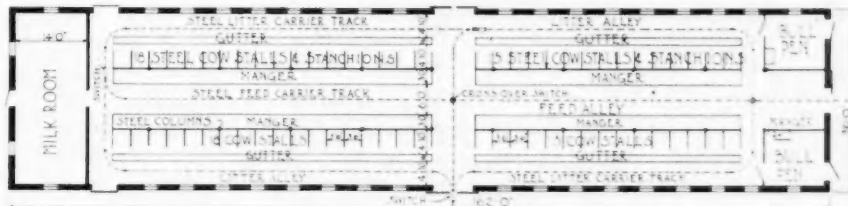
Just as there are no two barns alike, neither are there two ventilating problems exactly the same, and while the general principles of ventilation as laid down by Prof. King are thoroly understood by most contractors and builders, it still remains for those who have made a careful study of this subject to lay out in detail plans by which the contractor and builder should install this scientific system of ventilation as it is made today.

Structural Tile Barn Cuts Down Fire Risk

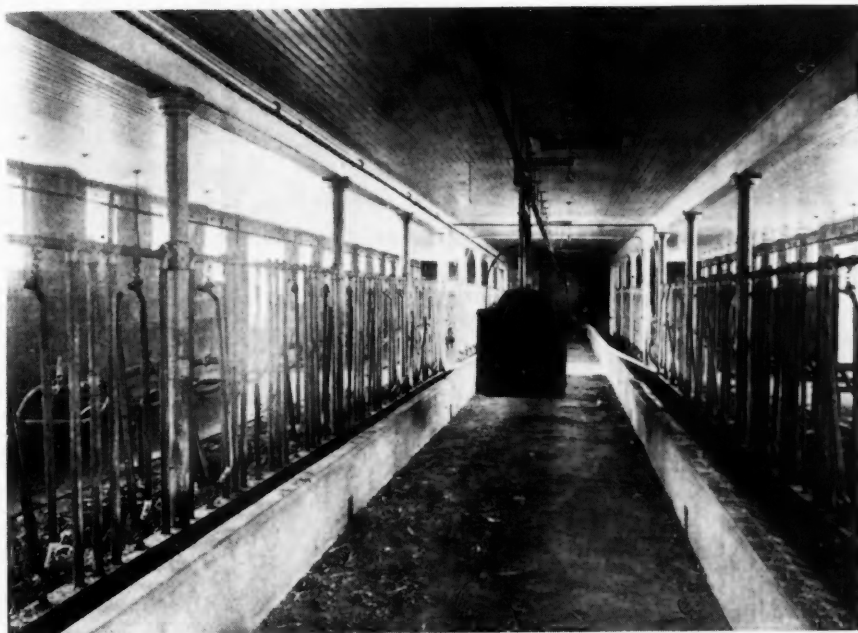
BUILDINGS should be placed close together on the farm for various reasons. The amount of labor needed to run the farm when the buildings are close together is materially reduced. In all the farm work it is always necessary to go more or less from one building to another and when the buildings are placed close together the time saved will be quite a factor in reducing the cost of operating the farm. One farm expert declares that it would pay a farmer to borrow

money to move all his buildings close together. The decreased cost would retire the principal at a rate of 10 per cent a year.

There is only one disadvantage to this arrangement



Floor Plan Arrangement, Size 36 by 162 ft.



View Down the Feed Alley, Showing Sanitary Cow Stanchions, Concrete Mangers, and Trolley Track Feed Carrier.

and that is the increased fire risk, unless the buildings are made of fireproof construction. If farm buildings are built the same as the one shown here, a close-up arrangement can be had without any danger of fire. This is one of the best features of fireproof construction.

Another advantage of structural tile construction as an example of fireproof building, is in the hollow space that is provided in the wall. This air space effectively insulates the interior of the barn from temperature changes of all kinds. In cold weather it will be warm inside and in hot weather it will be cool.



Structural Tile Barn, Size 36 by 162 feet, for Watertown State Hospital, Watertown, Ill. An Example of a Most Efficient and Economical Way of Building a Modern Barn. Designed by Illinois State Architect, James B. Dibelka.

"Did You Ever Notice That a Cinder in Your Eye Hurts More Than in the Other Fellow's Eye?"

THE MAN FROM THE LUMBER YARD

The "American Carpenter and Builder" has always taken the position that what serves the interests of its readers serves its own interests, too. We solicit the most unreserved suggestions as to how we can serve directly or indirectly the interests of each reader.

—EDITOR.

SUNDAY in New York City is a lonesome day for the man who does not enjoy the usual amusements and is only an occasional visitor. When I have to pass such a day, the weather permitting, I find a comfortable spot in a park and divide my time between book people and flesh and blood people. Generally the latter are of the most interest.

But the life that absorbed my interest on an October Sunday what that of that humble and industrious animal, the ant, whose ways the Good Book tells us to consider.

Hundreds of ants seemed to be holding a convention or exposition near my bench. That is probably why they are so wise—they have the get together habit. When every ant learns all that all the other ants know about their work, is it any wonder that Solomon, the wisest man, would remark on their wisdom?

The Ant as an Architect

Do you know that the architectural arrangements of their structures are on exact scientific lines? Do you know that ants build differently in wet than in dry soil, and in one climate different from another?

No doubt the ant had the getting-together-to-learn habit, even before the time of Solomon.

It has been of only recent years that man has considered the ways of the ant and has shown a willingness to learn of the experience of others and to give in return.

You may have noted that the Editor of the "A. C. & B." is able to provide, month by month, a tremendous

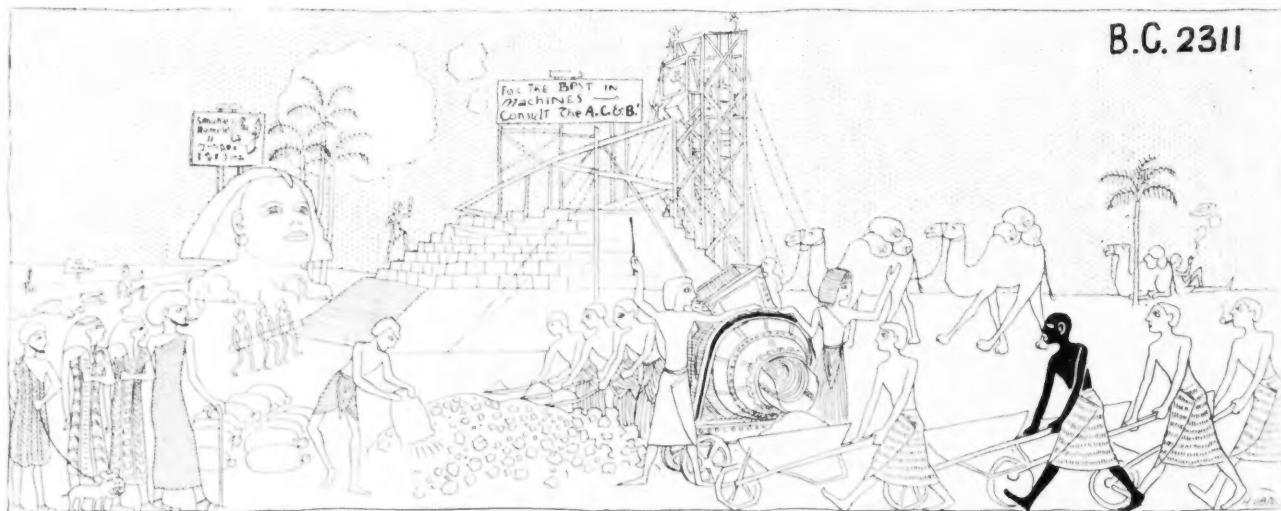
fund of information from the personal experience of DOERS for the benefit of LEARNERS, and that there is shown in the advertising columns a wonderful array of tools and machinery. But the editor said to me last December, "Boost all you can for the Chicago Cement and Good Roads Show. I hope that every enterprising reader we have who possibly can will make it a point to visit the show. It is an education that can be had in no other way."

I drew his attention to the fact that he got his bread and butter from selling advertising space for showing these same machines, and so to a considerable extent this show was a competitor.

He proved to me that the better educated a man is the more valuable he is to the "A. C. & B." as a reader, hence his desire to have as large an attendance of his readers as possible at the show. There is one thing I am betting my doughnut on, and that is that the great majority of those who attend the show are on our subscription list.

Things Were Different Then

If the chap that landed the contract from Pharaoh for building his tomb, that was afterwards known as the pyramid of Cheops, had been able to attend the Cement Show he would have gotten wise to an improved system so that he wouldn't have had a pay role of a hundred thousand men for 30 years. I know that the item of labor didn't cut much ice in those days. But consider how many peace ships he could have floated on his extra profits from installing a hundred concrete mixers and an elevating and spouting system!



We Can't Blame Pharaoh for Using Hand Labor to Build the Pyramids—He Would Have Had a Power Mixer and Distributing System on the Job if He Had Known Where to Get One.

If Appius Claudius had had a manager that had attended a good roads show, the Appian Way would have been completed in time so that Claudius could have tried out his favorite Arab steeds over that most famous roadway before he passed in his checks. Given the same number of dagoes equipped with a flock of paving mixers the Lincoln Highway could be completed over its thirty-four hundred miles in less time than that piece of three hundred and fifty mile paved road leading out from Rome.

Human nature was the same whether in the shadow of old Cheops or along the Appian Way. Oh yes, there always has been and always will be present GRAFT, JEALOUSY and INFLUENCE.

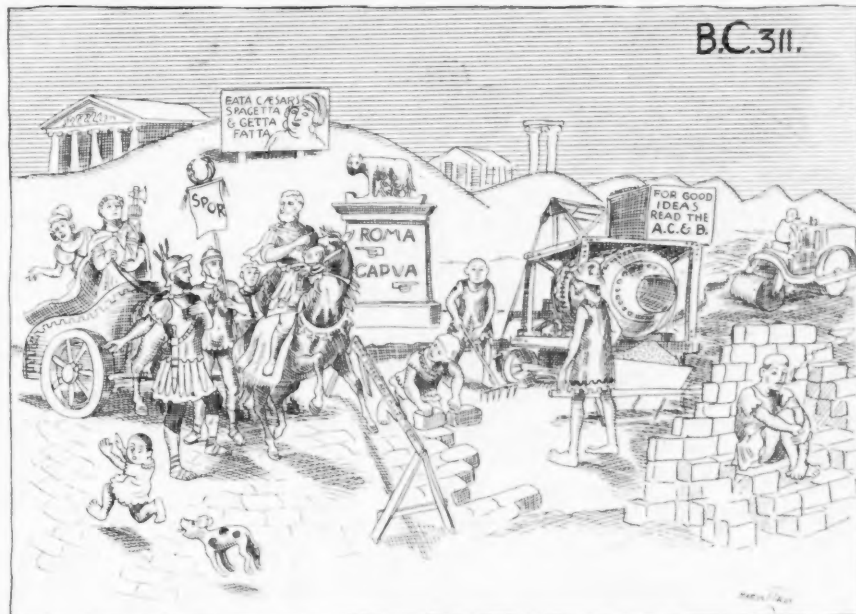
But don't overlook the fact that there always have been and are yet HONOR, INTEGRITY and EFFICIENCY.

I have attended many conventions and have found every one productive of a fellow feeling for the other man.

Did you ever notice that a cinder in your eye hurts more than in the other fellow's eye? Having a cinder in your eye helps you to sympathize with the other man who is similarly afflicted. Only a very callous man can meet hundreds of people engaged in similar work with like ambitions and trials and not be stirred by sentiments of kindly consideration.

I have known competitors between whom was the most bitter enmity when unacquainted who have been fast friends when they knew each other.

They would have been strangers for all time had they not been brought together on the neutral ground of the convention floor. Attending a convention is very much like going to church. If you enter with a feeling of superiority so you cannot learn, or a selfish inclina-



Very Early Drawing Reproduced from a Recently Unearthed Plaque Showing How the Appian Way Was Not Built.

tion to take all and give nothing, you will get very little out of it. I happen to know that a certain man of moderate means in our little church is among the most modest contributors in a financial way, but he is a most valuable contributor to every service because of his deep sympathetic interest. Incidentally he receives much in return.

Convention Saw Dust

The man who will not employ every means of bettering his efficiency belongs to the B. C. period, i.e., Bone Class.

Ox cart methods don't get you anywhere in the twentieth century.

When you meet your unscrupulous competitor at the Convention you find he is as square as you are.

Some men would sooner fail on their own plan than succeed by using the brains of the other fellow.

Be willing to give as well as to receive.

Everyone is a help or a hindrance to his association, which are you?

Learning more means earning more.

You can get more by working WITH than AGAINST.

The hardest workers, working principally from the shoulders up, are the greatest successes.

To arrive most quickly, know your destination.

Doing the thing that couldn't be done, spells Success. Do your part at the convention and then some. It is the "then some" that makes for special success.

Everybody is dependent on somebody for something.

The man that is not willing to do some planting will have skimpy reaping.

The man who begrudges the success of his neighbor handicaps his own.

A man that don't care to be interested should stay away. IDEAS are the most valuable things there are. Hundreds are to be had Gratis at the Cement Show.

Reciprocity, modernly speaking, is "you scratch my back and I will scratch your back." At no place is reciprocity more active than at a convention.

It is unfortunate for the human species that they are so slow in learning to work with instead of against each other.

I want to draw especial attention to the fact that an ant is not an ego-tist which may be one reason it is so successful. When you find a man who has gotten nothing out of the Cement Show put it down that his head is so full of his own wisdom that he could not absorb any of the good things given out by others or shown in the exhibits. We pause to inquire, why is an egotist?

Be as near an "ISSER" as you can.

THE MAN FROM THE LUMBER YARD.



ANNOUNCEMENT

COMPETITION FOR ARCHITECT-BUILDERS

TWELVE PRIZES—\$140.00 IN PRIZES

WE are pleased to announce a big competition for Our Readers to find out what buildings put up during the past year were best designed and constructed. The only restriction placed on this competition is that each building submitted must have been both designed and built by the individual or firm entering it. This will be more than the ordinary architectural competition—which is usually based on **imaginary designs** that are never built. **THIS COMPETITION IS ON STRUCTURES ACTUALLY ERECTED.** It will show the importance and high quality of the work being done by the vast and growing army of architect-builders, practical men who draw their own plans and who read the "American Carpenter and Builder."

A FOUR DIVISION CONTEST.

Class A—Best Designed Residence.

First Prize.....	\$20.00
Second Prize.....	10.00
Third Prize.....	5.00

Class B—Best Designed Public Building.

First Prize.....	\$20.00
Second Prize.....	10.00
Third Prize.....	5.00

Class C—Best Designed Commercial Building.

First Prize.....	\$20.00
Second Prize.....	10.00
Third Prize.....	5.00

Class D—Best Designed Farm Building.

First Prize.....	\$20.00
Second Prize.....	10.00
Third Prize.....	5.00

THERE WILL BE TWELVE PRIZE WINNERS.

We want every one of our readers who plans his own work to try for one or more of these prizes. Size and expensiveness do not count; small work will rank just as high as large, provided it has merit.

SEND THE FOLLOWING MATERIAL:

Each design entered in this competition must consist of:

- (1)—Photograph of exterior.
- (2)—Floor plans drawn to scale in black ink on white paper or cloth; walls and partition blacked in, and principal dimensions given.
- (3)—Statement of actual cost, both material and labor, summarized under the principal subdivisions of the work.
- (4)—About 300-word description of the most interesting points in connection with the building, or concerning your methods of handling the job.
- (5)—Proof of authorship (see letter form above)

These five things are required, and every design entered **MUST** include them.

In addition to these five requirements, any other material may be submitted that might add to the interest of the exhibit; as for instance, photographs of the building interior; photos taken during construction; views of drafting room, or of shop; or photos of any special piece of builders' equipment used in connection with the job.

DO NOT ROLL PHOTOS OR DRAWINGS—PACK THEM FLAT—BE SURE YOUR NAME AND ADDRESS ARE CLEARLY MARKED ON EACH.

PROOF OF AUTHORSHIP.

This competition is on structures that are both planned, and also built by the same individual or organization. That there may be no doubt as to the honesty of this competition, a letter in substantially the following form must accompany every design entered:

"I (or we) affirm that the structure illustrated in the accompanying photographs and drawings was actually designed by me (or us), and then constructed by me (or by our firm) in accordance with my plans and specifications.

"I am a regular reader of the 'American Carpenter and Builder.'"

"Signed....."

NO LIMIT IS SET ON THE NUMBER of buildings any one individual may enter in this Competition.

CLOSING DATE, APRIL 5, 1916. PRIZE WINNERS WILL BE PUBLISHED IN THE MAY "AMERICAN CARPENTER AND BUILDER."

Get busy at once. You have just two months to get photographs taken and plans drawn. Do your work justice by working up this material carefully.

Payment will be made immediately following publication, by means of our popular "Advertised Merchandise Vouchers," which are good for full face value in either whole or part payment for any goods advertised in the "American Carpenter and Builder."

HONORABLE MENTION DESIGNS will be published. More structures of real merit and interest will, no doubt, be submitted than the twelve prize winners. These will be given Honorable Mention, and will be published from time to time in the "American Carpenter and Builder" at the discretion of the Editor.

IN CASE OF A TIE for any prize, an extra prize of like amount will be awarded.

In case none of the designs submitted is up to the "American Carpenter and Builder" standard for publication, the Editor reserves the right to return all entries and declare the event off.

POINTS THAT WILL COUNT.

This competition will be judged not on the size or costliness of the building, but on its architectural suitability to serve the purpose it was intended for; its general appearance, convenience of arrangement, completeness of modern equipment, choice of building materials, and thoroughness of construction—all will be considered in making the awards. Also, apart from the building itself, the character of the material submitted—the photographs, drawings, description, etc.—will have great weight with the judges.

DON'T delay about getting started; begin right now. Don't wait till closing date to mail your package. Send it just as soon as you have it ready. Do not roll photographs, drawings or manuscripts. Pack them flat.

Address Prize Competition Editor,

American Carpenter and Builder,

1827 Prairie Ave., Chicago, Ill.



CEMENT BUILDING CONSTRUCTION

Lime Storage Bins of Concrete

DETAILS OF AIR AND MOISTURE TIGHT AND FIRE PROOF BINS FOR STORING UNSLAKED LIME

By H. Colin Campbell, C. E.

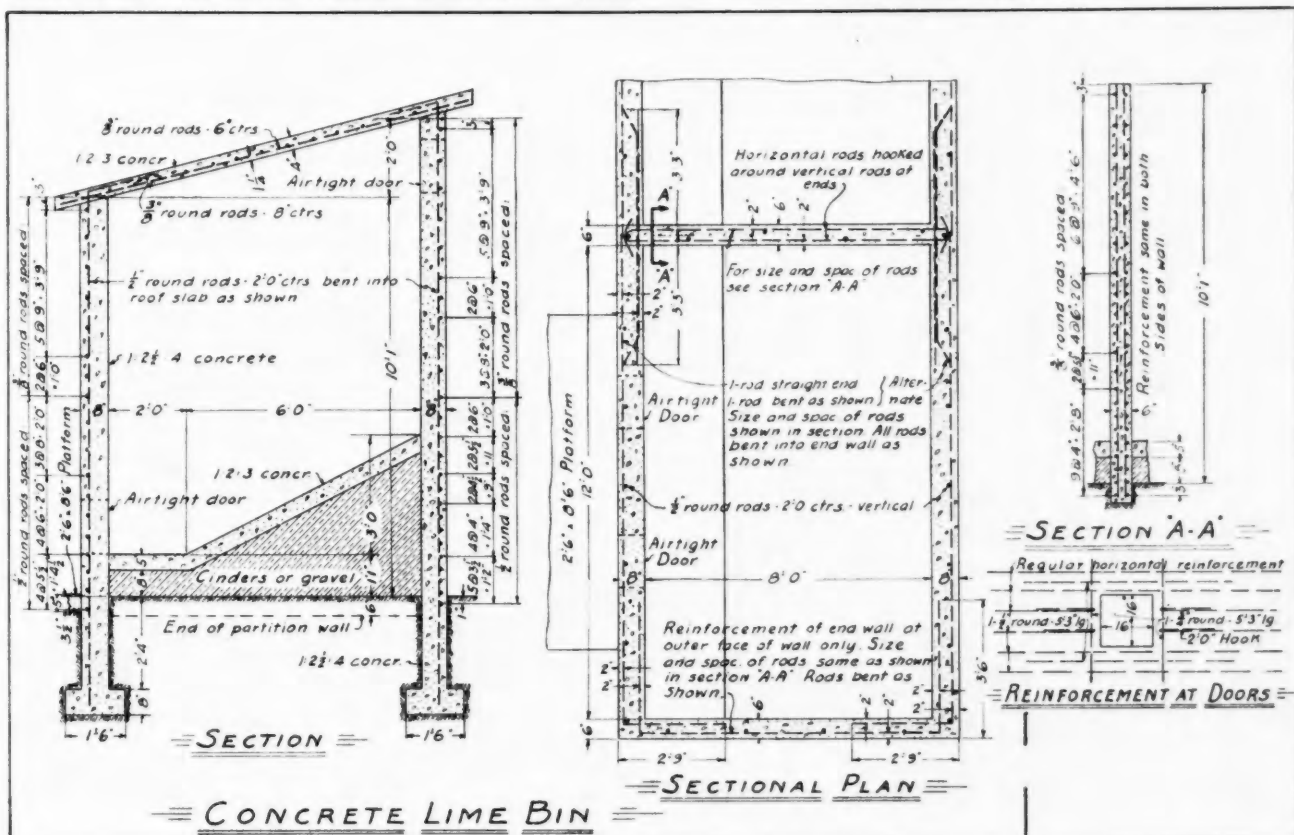
NO doubt most of our readers know that quicklime is a product resulting from calcining, or burning, in kilns, quarried limestone composed of practically pure carbonate of lime; that is, commercial lime usually is from the source mentioned. Relatively small quantities of commercial lime are sometimes produced from oyster shells, highly crystalline marbles, soft chalk, etc. Limes which are high in calcium content slack rapidly in the presence of water, and in so doing generate considerable heat. Likewise, they expand greatly thus resulting in a large increase in bulk.

There are a number of problems which must be solved in storing lump lime to preserve it in as nearly the same condition as when freshly burned. As all atmosphere contains more or less moisture, this varying in accordance with the increase of humidity, the prob-

lem of lime storage involves bins which can be kept practically air-tight to prevent slacking through absorption of moisture from the atmosphere. Various methods have been devised to construct lime storage bins of lumber so that they would be essentially moisture-proof. Board sheathing on studs with proper interlining between inner and outer wall faces has been the common method of constructing lime storage sheds of lumber. These are, however, not satisfactory when lime must be held for some time awaiting sale. This suggests the desirability of concrete construction, which makes practically an air-tight building.

Lime bins are usually about 8 feet wide, 16 feet long and 8 to 10 feet high, and these dimensions have been kept in mind in preparing the accompanying design for a reinforced concrete bin. The foundation


(Continued to page 98)



Details of Reinforced Concrete Storage Bins for Lump Lime. Each Bin 8 by 12 by 10 Feet High. Sloping Bottom Makes Bin Self-Cleaning.


MODERN HOUSE MOVING METHODS

For the Carpenter and Builder



The Old Way

By
E. W. LaPlant
PRESIDENT OF THE
La Plant-Choate
Mfg. Co.



The New Way

Moving and Remodeling Old Buildings

HOW CARPENTERS CAN GET INTO THIS BUSINESS—PRACTICAL POINTERS FROM EXPERIENCE
CHAPTER 2

CARPENTERS thruout the country are being asked nearly every day to make way for a new building on ground that has another building on it. The wrecking of buildings in such cases is common in some of our larger cities. But again you will note that in more cases today the buildings—instead of being wasted and destroyed—are moved to other locations.

In this article I will give a few instances of my own experience in moving the houses and how I reaped a big profit in every case. I want every carpenter or contractor who comes in contact with this kind of work to know how big money can be made with little effort and time.

You know how the value of lumber has increased in the past ten years and what small prices you get for material from wrecked buildings.

For instance, suppose a man had a six or seven-room house on a lot which he wished to use for a new modern home. The logical proceedings would be to buy a cheaper lot, move the house onto it, do a little repairing and fixing up and then sell it at a good substantial profit. That is the method carpenters and contractors of today are following. And they are realizing big profits by it.

In the past ten years I have bought scores of houses, remodeled them and sold them, and I have made big money on every deal.

This method of handling the job gives you the house moving to do, the carpenter work, mason work and painting. You are your own boss thruout the deal. You can spot the price and get good money for each part of the work. And the work that you cannot handle yourself you can sub-let to others and make a profit on it. There is always a class of people that do not have the money to buy a new house, but still they want a home of their own. These people are anxious to buy remodeled houses and you can make quick sales. I will quote for you several deals that I have made with good profits. You can do the same. It takes a little head work and you must be a "live wire." After a start, you will see how simple it is. Any one can finance it and besides your banker will aid you. Now let's go thru these three jobs and examine the cost and profit.



Fig. 1. On Its Way to a New Location.



Fig. 2. Fixed Up Ready to Sell at a Profit.

These Jobs That Made Money

Fig. 1 shows a house that I purchased for \$100.00, moved it to another lot and remodeled it, making \$1,681.00 profit on it.

Cost of house.....	\$ 100.00
Cost of lot, size 135' x 140'.....	500.00
Actual cost of moving 12 blocks.....	78.00
Digging Cellar.....	30.00
Foundation.....	150.00
Electric Light—Fixtures and Installation.....	27.85
Papering.....	27.50
Painting, Inside.....	12.00
Painting, Outside.....	31.50
Connecting Plumbing.....	73.25
Side Walk.....	16.40
Lumber used in Repairs.....	43.50
Carpenter Work.....	29.00

Total Cost.....	\$1,119.00
Sold House for.....	2,800.00
Selling Price.....	\$2,800.00
Total Cost.....	1,119.00

Profit\$1,681.00

Pretty good profit, and the best part is that I did it



Fig. 3. Big Houses Are Moved Easily.

when slack on other work. It made a good filler and kept my men busy all the time.

Figure 3 shows what really was a bargain. I bought the house for \$150.00; they gave me four days to get it off the site. I started moving the house with no sale in sight for it and I had no lot to move it on. The next afternoon I had it on the street and I was on my way. Where I was going was a question to me, but I headed for a vacant lot. I telegraphed the owner at Omaha that I would give him \$900.00 spot cash for the lot I was heading for, and received a wire the same afternoon from him accepting my offer. Mind you, I was still pulling the building while this transaction was going on, but it wasn't the first deal that I handled in that way. Here are the figures on this deal and they decisively show the profit that I made on it.

Cost of House.....	\$ 150.00
Cost of Lot.....	900.00
Digging Cellar.....	50.00
Foundation.....	225.00
Furnace (Hot Water) and Plumbing.....	275.00
Papering and Painting, Both Inside and Outside.....	160.00
Lumber.....	275.00
Carpenter Work.....	190.00
Grading.....	20.25
Electric Fixtures.....	32.00
Wiring.....	31.00
Paint (Material).....	35.00
Window Shades.....	16.00
Wall Paper (Material).....	28.60
Actual Cost of Moving.....	175.00
Side Walk.....	16.00

Total Cost.....	\$2,578.85
Can Sell House for.....	5,000.00
Selling Price.....	\$5,000.00
Total Cost.....	2,578.85

Profit\$2,421.15

As further proof of the value of this property I wish you to know I had no trouble in borrowing \$2,400.00 on it. In giving a loan on property they usually allow one-half of its value.

I have rented this place for \$40.00 per month and it's bringing me a bigger income than some new property which cost me \$5,000.00. Before I go on to the



Fig. 4. The Same House Moved and Placed. New Porch, Paint, Windows, and Location Make This a Paying Investment. The Owner Had Intended to Wreck.

next illustration I would like to mention that I put oak floors upstairs and down over the regular floors. Took out all the old windows and put in new style windows and I also put in a nice oak door in front. Two extra windows were added on the side at the kitchen, and in the dining room I cut in four small windows. The mill work, including the flooring and windows, cost me exactly \$116.00, but you see that it was money well spent because it made my house look right and not a botched up job. That is the trouble with some men, they try to fix up something with nothing and when they get done they have nothing.

Figure 4 shows the house after it was fixed over.

I am very sorry that I didn't take a view of house shown as Fig. 5 before I had it remodeled. It certainly was a bad looker. Many people in the neighborhood

objected to having the building put there, but I let them understand that when I finished with it I would show them a better house than any of the other houses surrounding it. I certainly proved my statement.

This was a nice big house purchased for \$150.00. This house worked over in nice shape as shown in this illustration and is now bringing me big rent. In fact, I am getting \$35.00 a month rent for it, and I had it rented before it was all completed.

I am giving below the cost of this property. I really made more on this property than I did on the others



Fig. 5. This House Looks Up-to-Date, and Was Quickly Rented. New Porch, Paint, Windows and Location Did the Trick.

spoken about. But you can realize the amount of money I made was due to the fact that I had a large bulk of a house that really did not cost me much more to move than the others. But to the people I bought it from I made out that it was quite a job and would cost a lot of money to move a long ways to another location, and that I was not sure whether I would wreck the building or move it. Of course I knew all the time just exactly what I could do with it. Right here I want to prove that this very point is the secret of buying houses cheap. Now, for instance, I bought a house the other day for \$100.00 and it was easily worth \$500.00 spot cash. The owner didn't want to bother with wrecking the building. He had his plans and everything was ready for the erecting of a new building and it was simply a case of "get it off the lot" and get it off as soon as I could. You can fix up houses of this type easily and with a little head work make a big profit.

Too Bad to Wreck a House

Now, Mr. Carpenter, it certainly is a shame to wreck a house. You lose money and so does the owner. You know the siding, the cornice, the moulding, the inside finish, the lath and shingles are lost when you wreck a building. You only have a pile of kindling and a little dimension lumber left. And after the men have been paid you have very little profit for yourself. Take the same house and move it to a cheap lot, put on a new porch, a new front door and fix up all the bad spots. Make it look right and you will sell or rent it

easily and quickly, and realize a good substantial profit on it.

From your experience of working among these old houses you know in nine cases out of ten the old houses have better lumber in them, that they are built with solid sills instead of box sills, which are stronger than the kind used in the houses of today.

Suppose that some of the siding is poor and that the house needs a new roof. That won't cost a great deal and the added improvement will bring you a higher price when you sell. You might also add a few windows, a new nicely finished door and a new porch. These improvements will mean much to the building and at the same time will not involve much expense for you. Figure 5 shows how a new porch has toned up the building very much and this porch was put on at very little expense.

Every year I plan to move and fix up three or four houses. I go out into the market for different buildings and buy them whenever I can. The work is generally done in the fall on the ones I remodel for myself, so that I can keep my men at work, whereas, if I did not have this work to do, I would have to lay them off. In this way I keep my men busy during the slack period and make big profits besides.



Lime Storage Bins of Concrete

(Continued from page 95)

should be carried far enough below ground level to provide good bearing. A fill is shown of clean cinders or gravel upon which the bin floor is placed. This guarantees that there will be no penetration of moisture thru the floor. As will be seen, the floor slopes toward the front of the bin; and the design contemplates that the building will stand with its longest dimension along a railroad side-track so that there need be no trimming of contents when unloading. The roof slopes away from the track at an angle corresponding to the angle of repose of the lime. This is for the purpose of reducing the confined air space to as small a volume as possible. There is also shown a partition wall both to add strength to the building and to enable the dealer to keep a portion of his lime entirely protected while using from the other section of the bin.

The design calls for the same amount of reinforcing for all sides, which has been done simply with a view to simplifying the construction for those relatively inexperienced in reinforced concrete design. Probably a bin such as shown could be built for \$250.

The economy of concrete in such construction is twofold. Lime depreciation is avoided and insurance risk reduced. The latter is an important consideration since there are well authenticated cases of serious fires having originated from the improper storage of lime.

Several manufacturers market a special type of cast-iron door mounted in a cast-iron frame and shutting against a rubber gasket to insure air-tight closing of the doors after loading or unloading contents.



Noon Hour Talks by the Boss Carpenter

Talk No. 43. Beam and Girder Floors in Mill Construction— Construction Series No. 7

THE BOSS SHOWS METHOD OF CALCULATION FOR BEAM AND GIRDER TYPE OF MILL CONSTRUCTION FLOOR

"WHEN we stopped last time," said the Boss, "you will remember that we were talking about general types of floors in mill construction buildings, and that we had described two classes of construction which are used to a large extent in modern buildings. We figured the size of the members in the ordinary laminated type of mill floor, and showed in Fig. 74 a general plan of the frame used in the second type of floor referred to. Fig. 76 will show another view of this beam and girder type of frame.

"The general description of this type of frame will be found in detail in Talk No. 42. A brief survey of this description shows us that the floors consist of heavy plank 3 or more inches in thickness, covered with two thicknesses of water-proof building paper, over which a $\frac{7}{8}$ -inch hardwood floor is laid. This main floor is nailed securely to the cross-beams shown in Fig. 76. These cross-beams are at least 6 inches in thickness and should have a cross-section area of at least 72 square inches. They are supported on top or on the sides of the main girder or posts by means of iron or steel brackets or stirrups. When brackets or stirrups are used, the top surface of the cross-beams should be flush with the top surface of the girders, and the floor should be laid so that no spaces will be present for the accumulation of dirt or for the passage of fire.

"The main girders are supported at the walls on iron or steel plates or in iron or steel wall-boxes built into the brickwork. At the columns these girders rest upon an iron or steel post cap with the column from the floor above extending between the ends of the girders and resting upon this same cap. These main girders should, as in the case of the cross-beams, be at least 6 inches in thickness and have a cross-section area of at least 72 square inches.

"The columns in this type of construction consist of lumber posts square in cross-section and not less than 8 by 8 inches in cross-section area for the top floor, and not less than 10 by 10 inches for all lower floors. The exact size of these columns will depend upon the

amount of load to be carried in each case. The latter part of Talk No. 41 will show the calculations for such columns.

"The spacing of the cross-beams which are held by the girders should in no case be less than 4 feet and generally is recommended to be from 6 to 8 feet. Where these cross-beams occur at a post, as shown in Fig. 76, a special type of post cap called a four-way cap may be used, or a bracket of the type shown may be used, if desired. The post cap is preferable to the bracket construction.

"In the type of construction shown in Fig. 76, it is advisable to limit the spacing of the columns in such a manner that the size of the floor bays or panels will not greater than 16 feet by 16 feet, altho a greater spacing is used in instances where the design demands such treatment or where light floor loads are to be carried. There is no hard and fast rule in regard to this point.

"Now that we have discussed these general points of construction," said the Boss, "we will apply our previously explained principles to the calculation of the size of the members in a type of frame similar to that shown in Fig. 76. We will change the detail of the problem used in Talk No. 42 by making the panels of the

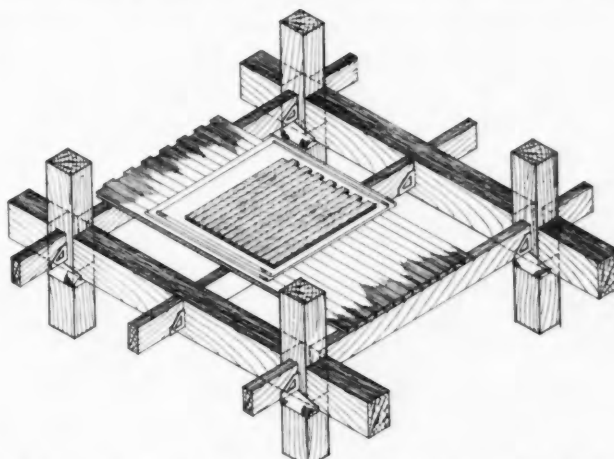


Fig. 76. Beam and Girder Type of Mill Construction Floor.

floor 12 by 16 feet as referred to above. We will use the same floor load, 150 pounds per square foot for the live load, and consider that the quality of material used for plank may be counted upon for a safe working stress of 1,000 pounds per square inch, while 1,300 pounds per square inch can be used for the beams and girders.

"It will be noted in Fig. 76 that the panels of floor plank rest with the ends of the planks on the cross-beams. These planks should be long enough so that they will extend over at least two spaces between cross-beams. Altho this condition gives them greater strength than in the case of a beam freely supported at the ends and of a length equal to the distance between centers of cross-beams, we will use the expression $M = \frac{1}{8} Wl$ for the value of the maximum bend-

ing moment to be used in our Formula $\frac{X \times b \times d \times d}{6}$
 $= \frac{1}{8} Wl$. It will also be noticed that the cross-beams

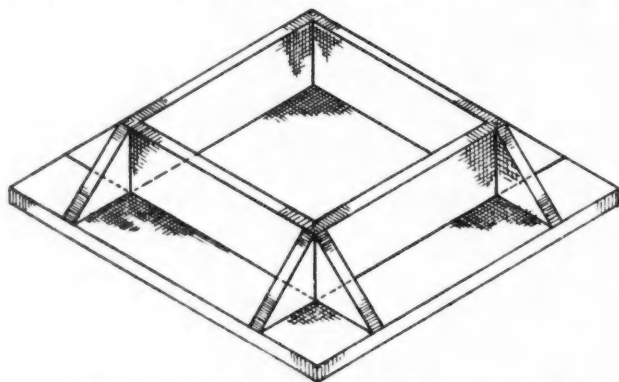


Fig. 77. Iron or Steel Base for Use Under Basement Posts.

will be figured as supporting a panel of floor of an area equal to the length of the beam times the distance between centers of spaces between beams. This will give a value of $M = \frac{1}{8} Wl$ for the bending moment in these beams.

"In computing the size of the main girders, it will be noticed that they receive their load at the center from the cross-beams and that they carry but little uniformly distributed loads along their length. For this reason, we should use the value of $M = \frac{1}{4} Wl$ in our bending formula.

"We will begin by finding the thickness of the roof plank to be used in the building of which Fig. 76 is a part. Assuming that the roof is flat and covered with 5-ply tar and gravel roofing weighing about 6 pounds per square foot, and that a snow load of about 40 pounds per square foot is to be expected, we will have a total load of nearly 50 pounds per square foot upon the roof. We will use this number to allow for the weight of the roof material itself. If the girders in the building are spaced 12 feet part on centers, it will make the length of the cross-beams extending between the girders somewhat less than 12 feet in length. If we assume this length to be 12 feet, we will surely be on the safe side. According to the conditions of our problem this would make the length of the main girders in

the other direction 16 feet to centers of columns. We will use one cross-beam located at the center of each girder and one at each end of the girder as shown.

"This construction will make the length of the plank from center of cross-beam to center of cross-beam about 8 feet in length. If we take a 12-inch width of floor as a basis, the load carried upon this piece of floor 12 inches wide and 8 feet long will equal to 8 times 50, or 400 pounds. Formula (A) of Talk No. 38 will be used as a basis of our calculations, supplying the proper value for the bending moment in each case. The formula as given was as follows:

$$\frac{X \times b \times d \times d}{6} = \frac{Wl}{8}$$

Filling in the values in the above formula, we have the following equation:

$$\frac{1,000 \times 12 \times d^2}{6} = \frac{1}{8} \times 8 \times 50 \times 8 \times 12$$

$$d^2 = 2.4.$$

$$d = 1.6 \text{ inches.}$$

Altho this value of d is less than 3 inches, good practice demands that we use a thickness of at least $2\frac{5}{8}$ -inch finished material in such a location.

"In finding the size of the roof beams which are to support these planks, we see that the area supported by one beam is $8 \times 12 = 96$ sq. ft. If the loading is 50 pounds per square foot on this area, the total load carried by one beam will be 4,800 pounds, uniformly distributed. Using a value of $X = 1,300$ pounds per square inch in Formula (A), and assuming that a width of 6 inches is to be used, we obtain the following result, after filling in the proper quantities:

$$\frac{1,300 \times 6 \times d^2}{6} = \frac{1}{8} \times 4,800 \times 12 \times 12$$

$$d^2 = 67.$$

$$d = 8\frac{1}{2} \text{ inches.}$$

It is seen that this value for d will not give an area of cross-section equal to 72 square inches. For this reason it will be necessary to make the depth of beam 12 inches, thus using a 6 by 12-inch timber in this location.

"The size of the roof girders will be obtained likewise from Formula (A), using a value of $M = \frac{1}{4} Wl$ instead of $\frac{1}{8} Wl$. The load supported by each roof girder will be 4,800 pounds. Assuming an 8-inch width for girder, and using a unit bending stress of 1,300 pounds per square inch, Formula (A), properly filled in, is given below:

$$\frac{1,300 \times 8 \times d^2}{6} = \frac{1}{4} \times 4,800 \times 16 \times 12$$

$$d^2 = 133.$$

$$d = 12 \text{ inches.}$$

This result shows that an 8 by 12-inch girder will be the proper size to use in this location.

"In the calculations for the floors of the building, the

live load will be taken as 150 pounds per square foot and the assumed dead load, due to the weight of the floor itself, as 15 pounds per square foot, making a total of 165 pounds per square foot. The calculations for the size of the floor plank will be similar to those shown for the roof plank above, with the exception that 165 pounds per square foot will be used where 50 pounds was used in those equations. The following equation resulting from Formula (A) will show that the proper thickness of floor will be about 3 inches.

$$\frac{1,000 \times 12 \times d^2}{6} = \frac{1}{8} \times 8 \times 165 \times 8 \times 12.$$

$$d^2 = 7.9.$$

$$d = 3 \text{ inches.}$$

"The calculations of the floor beams again are based upon an area of 96 square feet supported by each beam and a total load of 165 pounds per square foot, thus making a uniformly distributed load of 15,840 pounds for each beam. Formula (A) shows that if a width of 10 inches is assumed for these beams, a depth of about 12 inches will be necessary. Therefore, we should use a 10 by 12-inch beam in all floors which are subjected to this load.

$$\frac{1,300 \times 10 \times d^2}{6} = \frac{1}{8} \times 15,840 \times 12 \times 12.$$

$$d^2 = 132.$$

$$d = 12 \text{ inches.}$$

"The floor girders likewise support a single central load of 15,840 pounds. Assuming a 14-inch width for these girders, we find from the following equation that the depth should be about 16 inches.

$$\frac{1,300 \times 14 \times d^2}{6} = \frac{1}{4} \times 15,840 \times 16 \times 12.$$

$$d^2 = 250.$$

$$d = 16 \text{ inches.}$$

"If it is not desired to use so large a timber in a single stick, two 7 by 16-inch or 8 by 16-inch timbers may be bolted together and used in the place of the single stick, taking care to keep the 16-inch dimension vertical. Where such timbers are used, the surfaces which join should be planed and the two timbers bolted together securely with no air space between the timbers.

"The calculations for the size of the columns are practically the same as those shown in Talk No. 41. The loads carried by the posts which support the roof should be determined, and the size of the column needed found from the following formula:

$$\frac{W}{A} = 4,000 - (8/10 \times 1/d \times 1/d)$$

The columns of the next floor below carry all of the load from the columns above in addition to the load on a panel of floor located directly over these columns. The detail of this part of the calculation will be identical with that which has been described in the article referred to above.

"Pickups" on the Job

By H. J. Blacklidge

SPEED is a prime requisite if a man wishes to stay on the job till the floor is scraped. But remember that if he sacrifices *quality* his speed will be worse than useless. It kills his own chances of future work and it murders the Boss's reputation.

DO not be afraid to suggest improvements. Once I was in a house where four doors in a tiny hall interfered with themselves and the doors in two adjoining rooms. Had two of the doors been of the sliding type there would never have been any "cussing" of the man who built the house. He never got another chance to work for the owner of that house. Where there is a swinging door from the pass pantry into the dining room, a sliding door from the kitchen to the pantry is a vast improvement over the old style of hinging it. You will see that I am enthusiastic over sliding doors. They are certainly close to the ideal according to my notion.

AT the risk of being hooted I am going to preach a little. If the coat fits you put it on and wear it; if it does not, then it isn't meant for you. A man was fired a few days ago. He was a good workman—fast, capable, efficient, industrious. WHY was he discharged? GROUCH! That one word sums it all up. He was cranky and grouchy practically all the time. Finally the Boss told him to smile or pack. He preferred to pack.

Talking about it later, the Boss said: "That fellow turned away a man who is going to build a six thousand dollar house in the Spring. I have been working for the job for two months. And here when I bring him around to look at some of my work and he asks what kind of wood are in those dining room panels, that fellow snarls, 'Any kid knows elm when he sees it!'" The grouch may do satisfactory work, but the man with the smile gets the second and third job.

IT is not the man who makes the most money, but the man who gets the *most jobs*, that finds Success looking for him. Better make one dollar on a job and get the next one, than make five dollars and never repeat.

SWEARING does not help any and it *may* hurt—especially if the hearer owns any children.

NO tool will cut if its temper is gone. Men are much the same in this respect.

THE man that flies around when the boss is here is pretty apt to lay around when the boss is somewhere else.

"EIGHT hours by steady" will accomplish a heap more than "ten hours by jerks."

IT'S a long way from apprentice to architect; but there is not one single thing between them except a man's own self.



A Modern Three-Flat Building of the Popular City Type. Each Apartment Containing Five Large, Well Lighted Rooms and Bath. Size of Building on the Ground, 26 Feet 6 Inches by 50 Feet. When Writing About This Design, Please Refer to No. 6761. Price of Blueprints and Specifications on Application.

by a very wide cased opening so that they form almost one room together. They should be finished in the same style because of this. The two are here shown with beamed ceilings of almost the same design.

The entrance to the building is into a stair hall that has a door opening into the flat on that floor and also the stairs leading to the flats on the upper floors. The rear entrance is handled in much the same way. The stairway is enclosed and has a door opening to a landing at each of the floors.

The kitchen is compact and well arranged. Each kitchen has an opening to the dumb waiter so that material can be brought up from the basement very easily. The pantry is located between the kitchen and the dining room.

The back porch can be easily fitted up to serve as a sleeping porch. It can be screened and is located conveniently as it opens into one of the bedrooms. It makes an attractive part of the flat.



Arrangement of Interior of Three-Flat Building.

Fire-Resisting Farm Buildings

CONCRETE AND METAL LATH AS APPLIED TO THE BUILDING OF FARM STRUCTURES OF ALL KINDS

FIRE-RESISTING farm buildings of concrete have several advantages which can be seen from the accompanying illustrations and details. One of these is that the different methods of construction make it possible to provide hollow walls with the insulating effect of the air space.

Another advantage lies in the fact that the interior surface can be made very smooth and impervious to

here showing some illustrations of the "Wabeek Farm," Birmingham, Mich., owned by James Couzens, recently vice-president of the Ford Motor Company. This modern barn arrangement illustrates a large and most complete plant—a type of barn-de-luxe. In spite of the fact that it is rather elaborately equipped and represents a large investment, it is entirely self-supporting and pays a satisfactory rate of interest on the



Notable Buildings on "Wabeek Farm" of James Couzens, Birmingham, Mich. Cement-Plastered Metal Lath Used for Silos, Fences, Partitions, Etc. Albert Kahn, Detroit, Mich., Architect; Ernest Wilby, Associate.

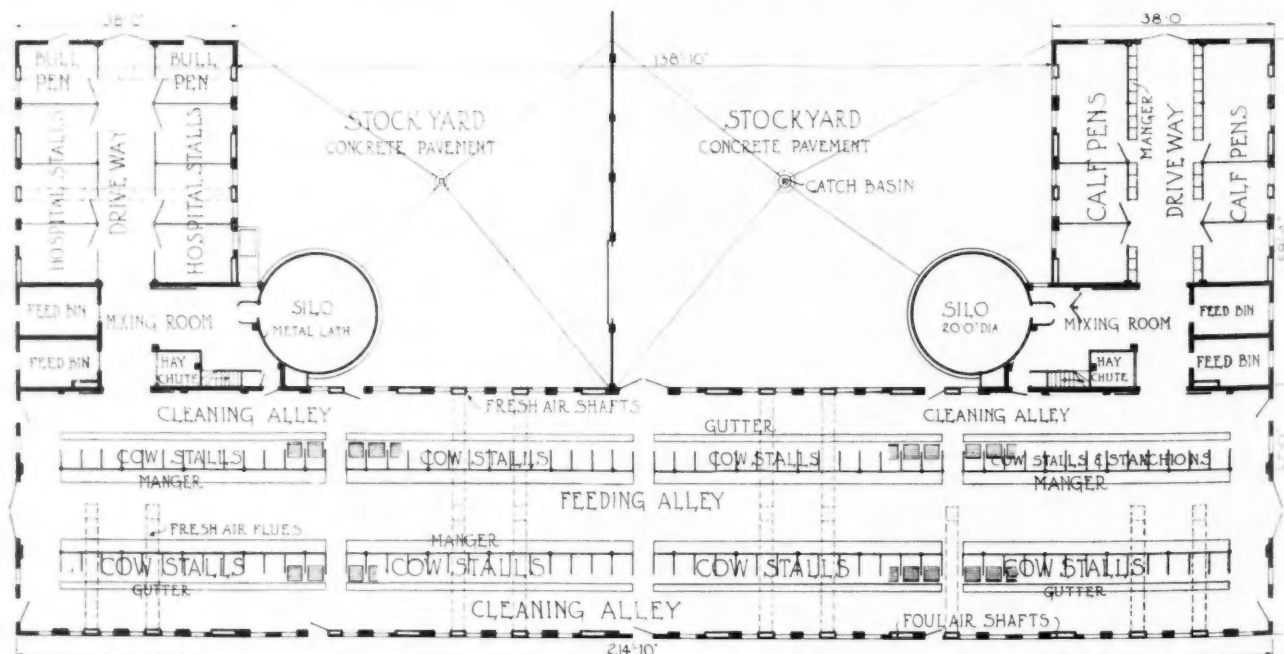
water or moisture of any kind. All parts of the interior can be washed down with a hose if desired.

The buildings can also be placed closer together without increasing the fire risk in any way. A compact arrangement, such as is possible under these conditions, results in a large reduction in the amount of labor necessary to run the farm.

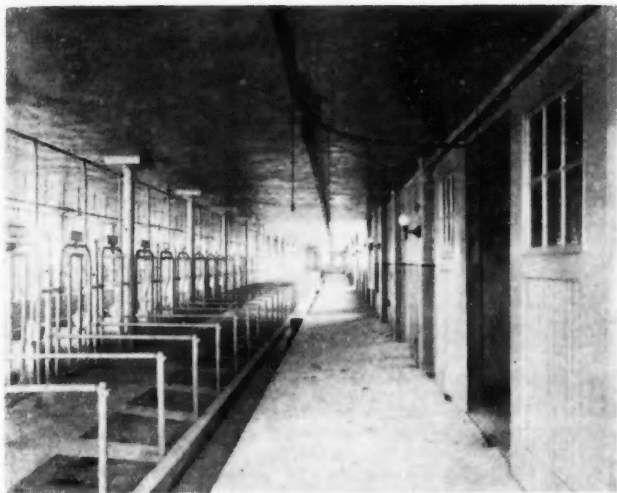
As an example of this kind of construction we are

investment. Charges against depreciation are small.

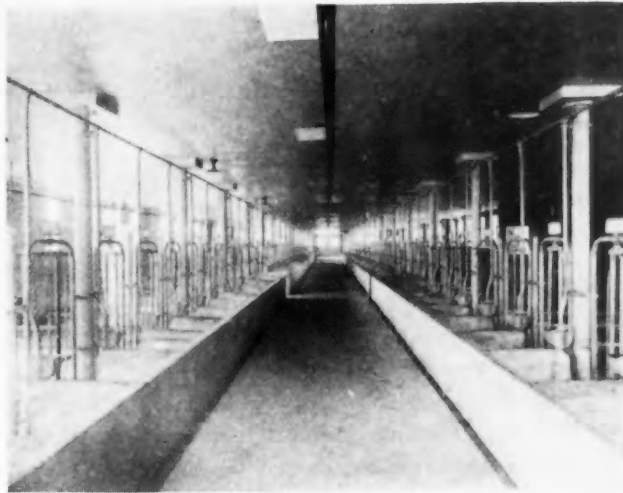
This is another great advantage of modern methods of construction, as the upkeep on the buildings is reduced enough so that it is possible to operate such a large, expensively equipped plant at a profit. It stands to reason that if such a farm is a paying proposition, such methods of construction as are used here can be applied equally well to smaller farm structure.



Floor Plan, showing the Arrangement of "Wabeek" Farm. This Gives an Idea of the Size and Completeness of This Modern Dairy Plant. Provision is Made to Handle in the Most Efficient Way All of the Problems That Are Found in Dairying



One of the Litter Alleys in the Dairy Stable at "Wabeek" Farm. Note the Simple, Substantial Construction of All Parts of Interior. Also Neatness of Pipe Stall Divisions.

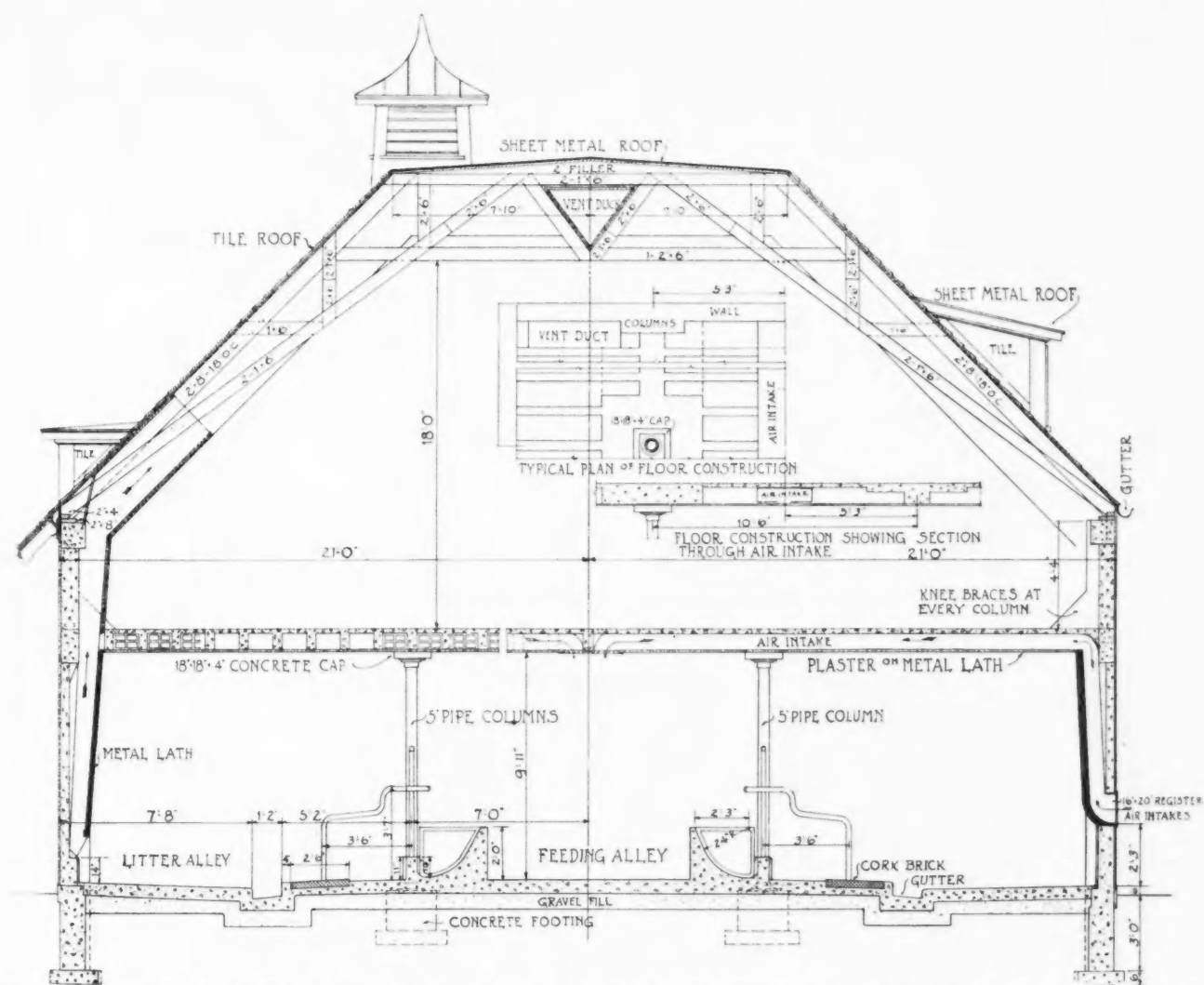


View Down the Feed Alley at "Wabeek" Farm. Entire Interior Finished in Concrete, Including Ceiling, Which is of Cement-Plastered Metal Lath.

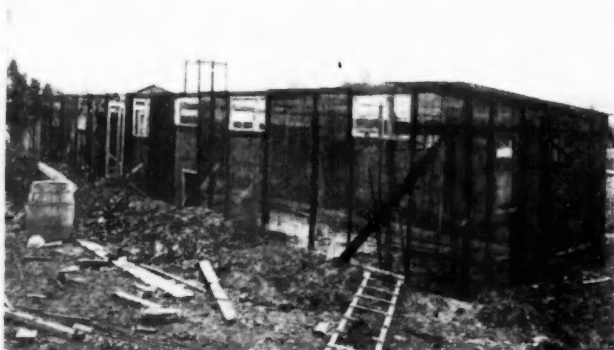
Two types of construction are used in various parts of the buildings on this farm. The walls of the stable are built of hollow brick that are plastered over with cement stucco. As the walls are 12 inches thick, three air spaces are provided. This very effectively insulates the stable against all temperature changes

and keeps it cool in the summer and warm in the winter. The silos, partitions in the stable, and the fence in back of the stable are of metal lath covered with cement plaster.

Another method is used in building the ceiling over the stable. This is made with tile and concrete and is



Section of "Wabeek" Dairy Stable, Showing Some of the Construction Features. The Air Intake is Built Thru the Ceiling Over the Stable, Which is of Concrete and Tile. The Truss Framing for the Roof is Unusual.



Light Steel Frame with Metal Lath Erected and Ready for Plaster Coat in Hog House Built on the Farm of F. F. Ingram, Grosse Isle, Mich.



Hog House with Plastering Completed on the Farm of F. F. Ingram.

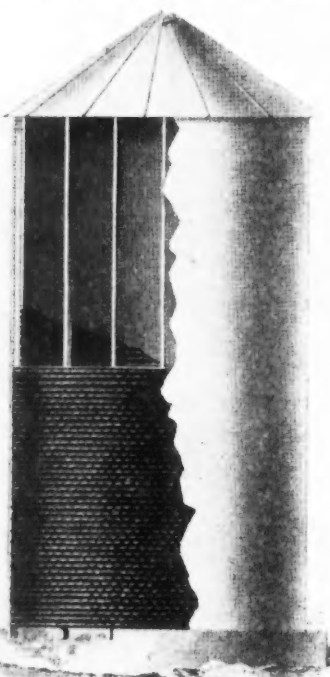
reinforced so that wide spans can be obtained with very few posts extending into the stable.

Many of the details of construction are shown in the cross-section.

Other farm buildings of metal lath and concrete are shown in the other illustrations. The hog house shown

can be built very quickly by this method. A light frame of steel channel or wood studs is erected and is covered both inside and out with metal lath. The plaster coats are then applied on both the sheets of lath. It gives a very smooth interior finish that is easily cleaned.

Silos are built of sheets of metal lath which are curved to shape and applied on both the inside and the outside of the studs. The grain crib is built in the same way, except that the concrete is poured between the two sheets and the out-



Metal Lath Curved to Fit Around Both Inside and Outside of Studs in Building Silos.

side and inside plaster coats are then applied. The cost of metal lath and cement plaster construc-

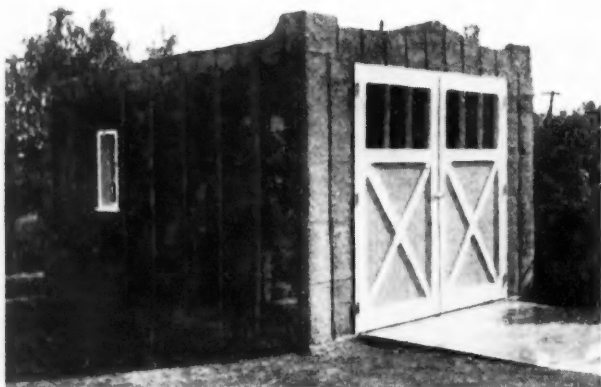


Interior View of Hog House Illustrated Above Built with Metal Lath and Plaster on the Inside and Outside.

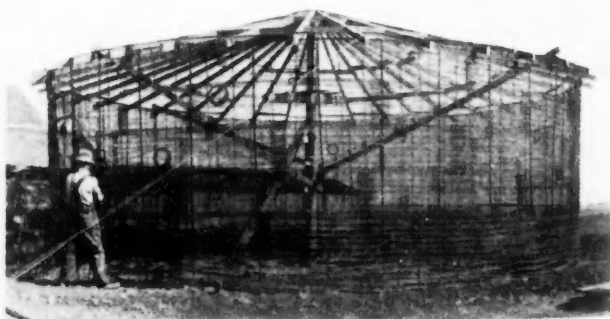
tion is very little more than for good timber construction. It is very sanitary because of its smooth surface, which is not affected by water. Its fire-resisting qualities cut down the fire risk on all farm buildings.

Elevated Water Tank.

The farm water supply may be pumped from a deep well and stored in an elevated tank supported by a strong framework. The elevation should be sufficient to give a pressure of about 19 pounds, which may be increased by starting the pump. The water is forced into the tank or reservoir thru a standpipe which enters the tank from the bottom. It is protected from freezing by an insulation which consists of mineral wool packed around between the pipe and a casing which surrounds the water pipe.



Garage Built of Metal Lath Ready for Its Finishing Coat of Plaster.



Frame Covered with Metal Lath for a 6,000-Bushel Grain Crib on Farm of Carl F. Ditus, Burdett, Kan.

Possibilities of the Steel Square

A COMPARISON OF THE NEW AND OLD WAYS IN LABOR-SAVING DEVICES WITH PRACTICAL ILLUSTRATIONS IN CONNECTION WITH ROOF FRAMING BY THE USE OF THE STEEL SQUARE

By A. W. Woods

THE old saying that there is "nothing new under the sun" is as applicable in these days of hurry and get there quick as it ever was; yet as a people, we are always on the lookout for something that will lessen our daily work, both in time and labor. In short, get as much as we can for as little as we can.

In our efforts today to say something on roof framing that we have not touched on before, we turned

angles of the diagram and then by placing the bevel on the timbers, the results obtained will be all right, just as in the case of the farmer harvesting his wheat with a reap-hook in days of old. But there are easier ways of doing both.

And so in Fig. 2 the easier way for obtaining the side cut of the jack by the aid of the steel square is shown. In this, the same proportion is taken as in the former illustration. No figures are shown on the square, because that is governed by the size of the building. The first position of the square No. 1 shows the proportion of one-half the width of the gable or side of roof on the tongue and the length of the common rafter on the blade. Now, without change of figures, apply the square to the back of the rafter, and the blade will give the desired angle for the cut, as will be seen in the position of No. 2. Note how it coincides with the bevel placed in the angle of the diagram. This will also give the side cut of the hip, provided it is first properly backed and the square applied to the plane of the backing.

This formula applies to any shape the building may have but to obtain the side cut of the unbacked hip, requires another illustration and while the formula remains the same as in the former, it requires different proportions to take on the square for the required angle.

This we can better explain by referring to Fig. 3. Here are shown two hexagons, one inside of

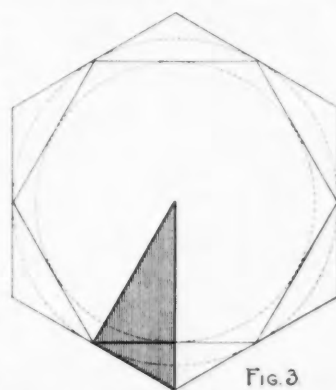


FIG. 3

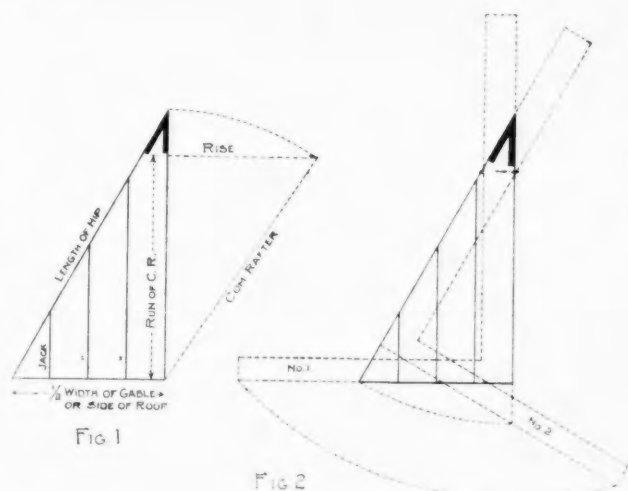
the other, with circumscribed diameter of the smaller equal to the inscribed diameter of the larger. In connection with this are shown their respective plans and it will be seen that one overlaps the other, thus showing that the run of the hip rafter of the smaller is equal the run of the common

rafter of the larger and by considering the hip rafter of the former the common rafter of the latter, the angle thus found will be the required angle to take for side cut of the unbacked hip in the first case.

When the true principle involved is once understood, it is rarely necessary to resort to a diagram, as the calculations can be determined by placing the square direct to the timber.



WHEN you don't know which way to turn, don't turn—hold up your chin and steer straight ahead.



An Old Rule Interpreted by Means of the Steel Square.

to some old books on Roof Framing, thinking to find a cue for a starter. Some of these books are yellow with age and have long since gone out of print. In these books can be found illustrations covering everything imaginable in roof framing, some of which would rival anything in print today; but what seems strange to us is that the steel square, though one of the oldest tools in use, was practically ignored as far as roof framing purposes were concerned, some of them not even mentioning it but resorting wholly to geometrical diagrams elaborately drawn out with different colored lines and with reference letters and in some cases using practically the whole of the alphabet, making it a most tedious matter to ferret out, especially so when the descriptive matter is on another page of the book. We are not trying to find fault with the results thus obtained, but their way of getting at it in most cases was laborious and tiresome.

The solid lines in Fig. 1 show one of the old hand-me-down rules to be found in all of the old books and which is occasionally bobbing up as "my rule." We have shorn from it the descriptive matter and instead have printed the names of the various parts so that it may be more readily understood. The diagram being usually laid out to a scale of one inch to the foot and the lengths of the rafters found accordingly, and the cuts obtained by applying a bevel square to the



Bungalow with Well Arranged Floor Plan

In a house that is intended for a home there is one feature that should always be included in the arrangement. A large living room is perhaps of more importance than anything else. It provides a place where all the family can meet and enjoy themselves.

One of the best ways of arranging a large living room is shown in the bungalow here. The room is made rectangular in shape with one dimension longer than the other. In one end of the room the fireplace is located. Such an arrangement, when helped out with some well chosen furniture, makes a room where everyone will be glad to stay all the time. The fireplace seems to brighten the room more than it does when it is placed on the side.

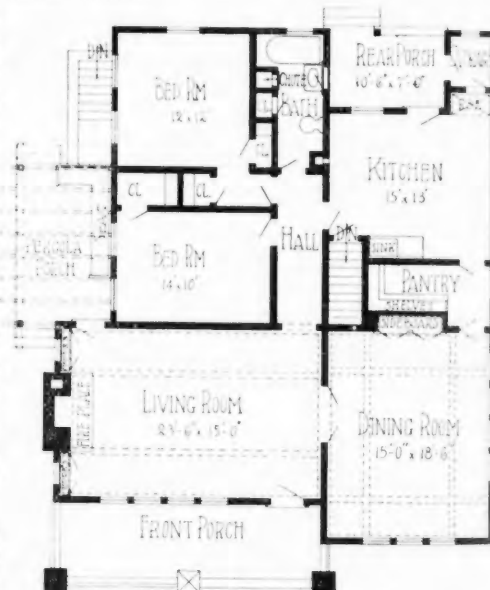
The living room is connected to the dining room by a pair of swinging doors that can be thrown open so that the two

rooms can be used together for entertaining when desired. Both the rooms should therefore be finished in somewhat the same style so that they will harmonize well. Both have beamed ceilings which generally have the effect of making the room seem unusually cozy. The lighting of both these rooms is taken care of in good style as plenty of windows are provided.

There is a door from the living room to a nifty little side porch that will be used by everyone in the warm weather. It has a pergola roof that harmonizes well with the general plan of the house and especially with the beamed ceilings of the living and dining rooms. A little seat is built on this porch which adds to its use in the warm weather.

The exterior of the house is finished in siding in alternate wide and narrow courses. The porch with its heavy pillars and broad,

flat roof is particularly inviting, being placed under the projecting eave of the house.



Floor Plan, Size 40 by 46 Ft.



Well arranged bungalow of five rooms. Size, 40 feet by 46 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections, and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6757.

Six-Room Two-Story House

The accompanying floor plans and perspective show a small two-story house with a good arrangement. On the first floor are the living rooms, while on the second are the bedrooms and a bathroom. There is also a den on the first floor that can be used as a bedroom if desired.

The exterior shows this design as a compact and fairly small house that has a pleasing appearance. The walls are finished in shingles up to the plate and the gables and sides above this are in stucco. The gable is finished in an attractive panel design, which is built around the windows. The front porch is built out from the house under a separate roof.

The house is built well up from the ground, as shown, so that plenty of room is provided in the basement.

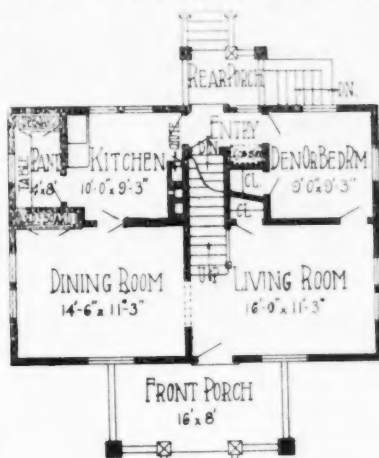
The four rooms on the first floor are each set in one corner. At the front two corners are the dining room and living room, while in the back there is the kitchen and den.

The living room and dining room are much the same in general shape and

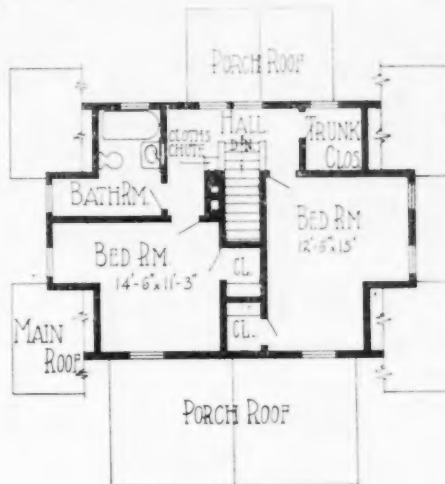
style, tho the living room is larger. Both have their windows placed in much the same way. Each has a window toward the front of the house and two on the side. The entrance to the second floor is thru the living room. In the back part of the dining room is a cupboard that is built back into a little alcove. The living room and dining room are connected by a cased opening.

The kitchen is compact and the pantry with its convenient arrangement forms a valuable addition to it.

On the second floor the bedrooms are built in the two front corners of the house and have windows opening toward the front and toward the side thru dormers. It is a good arrangement, as it gives each bedroom an exposure on two sides.



First Floor Plan.



Second Floor Plan.

Arrangement of House, Size 32 feet by 22 feet.



Modern two-story, six-room house. Size 32 by 22 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$7.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6763.

Bungalow with Attractive Paneled Stucco Walls

The accompanying perspective shows a stucco exterior that is finished in an unusually attractive way. The stucco is a rather light color and is divided into panels by dark stained wood strips. Typical broad overhanging eaves of the bungalow type are provided and are supported in front by brackets that are of the same dark color as the panel strips. This dark wood contrasts in a pleasing way with the white woodwork of the window sash.

Another distinctive part of the exterior is the side entrance porch. This is small with an almost flat roof built out over it. The porch pillars are made in the same way as the foundations and are constructed of stone. They could of course be built of cement blocks or of stucco designed in some way to harmonize with the stucco walls.

The living rooms occupy the entire front part of the house, while back of this on one side are two bedrooms and a bath, and on the other are the dining room and kitchen.

The living room is arranged in a very artistic and attractive way. The ceiling is beamed and the fireplace is located along one of the long sides. It is flanked on either side by a small bookcase. To balance up the rooms, with a fireplace located in such a way, it is necessary to provide some arrangement that will break up the flat wall surface at either end of the room. This is handled in a

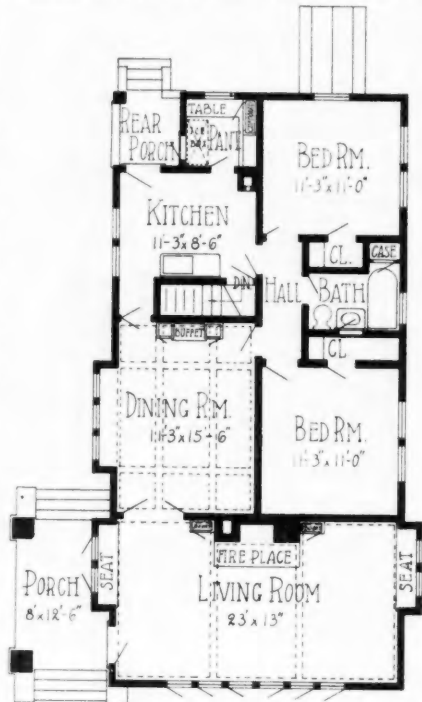
mighty attractive way. At either end, opposite each other, is a seat built out into a window of two frames. Opening toward the front of the house is a battery of six casement windows that help considerably in making this room very attractive.

The dining room also has a beamed ceiling and can be finished in much the same style as the living room. It is connected to the living room by a double

swinging door. In keeping with the many windows in the living room, the dining room is arranged with a bay window containing three broad frames that cover almost all of one side of the room. A buffet is built against the back wall. The hall, which connects up the sleeping part of the house with the rest, is reached thru a door in this room.

The kitchen is of the compact type, in which all the necessary parts are supplied with the minimum of waste space. Its arrangement eliminates the walking back and forth over a large floor space and cuts down the hard work in the kitchen to a large degree. One of the most important parts of the time and labor-saving kitchen arrangement is the pantry, placed alongside the back porch in the rear of the kitchen. On one side is a cupboard and in the end is a table. Along the other side, opposite the cupboard, is placed a refrigerator that is arranged to be iced from the back porch.

The house is set well above the ground so that a good basement can be provided. This basement will have room enough so that all the rooms that are so useful in a basement can be easily provided for. There will also be plenty of headroom for any kind of a heating plant that is decided upon. The basement is equipped with an inside and an outside entrance which increases its usefulness considerably. The two bedrooms and the bathroom can be reached thru the hall that has doors opening into it from the dining room and the kitchen.



Floor Plan, Size 24 by 48 Ft.



Paneled stucco bungalow of five rooms. Size, 24 by 48 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6762.



Six-Room house with artistic porch design. Size, 31 feet 6 inches by 45 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$7.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6756.

Six-Room House of Artistic Design

The accompanying perspective and floor plan show a cozy little bungalow containing many attractive and artistic features. One side of the house is occupied by the living room, dining room, and kitchen, and the other by three bedrooms and the bathroom.

The most striking feature of the exterior is the front porch. The porch is built out into a small curved recess on each side of the steps. The railing and the foundation are of rough-faced cement blocks. The railing is built up with a lattice work made of the blocks. The heavy, tapering pillars on each side of the porch are made of the same material. The gable decorations over the porch are pleasantly designed so as to harmonize with the porch construction. A broad, flat window furnishes light for the attic and is surrounded with a wide frame finished in white. The rest of the trim around the gable and also the whole house is in white. The gable itself is finished in stucco.

The living room is arranged to make an attractive and cozy room. The method of constructing the fireplace is one of the features that lend an air of distinction to this room and stamp it as being entirely different from the ordinary. The large brick fireplace is built across one of the back corners. Building in this way makes the fireplace have the appearance of being built out into the

room and adds to the cozy, snug impression that one receives from it.

The outside wall of this room is also decorated in good style. In the central part is a long, double bookcase fitted

with two sets of double doors. This is placed under a small window set high up on the wall. On either side of the bookcase is a seat that is placed against the long window on each side of the smaller. These three windows together with the two opening onto the front porch keep the living room bright and cheerful. Between this room and the dining room is a pair of double doors which can be readily swung back so that a large, unobstructed floor space can be obtained if desired. Another door near the fireplace opens into the back hall.

The dining room is attractive and well arranged. One of its most pleasing features is the buffet, built into the square bay window on one side of the room. In a fairly small house it is best to have a dining room that is almost square as the most common types of dining room tables are either nearly square or are round. In a room of this shape, such a table gives a balanced effect with the same distance between the table and the walls on all sides. The table and the furniture should be in a style that will harmonize with the buffet, so as to form an attractive combination.

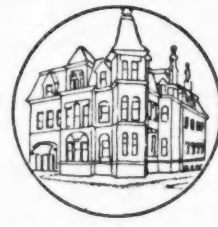
The kitchen is directly behind the dining room. The large porch will form a useful addition to the kitchen in warm weather. The pantry is equipped with a table, a cupboard, and an ice box.

Three bedrooms with a bathroom occupy the other side of the house. They are connected by a long hall that insures privacy and makes the rooms accessible.



Floor Plan, Size 31 Ft. 6 In. by 45 Ft. 6 In.

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers Are Requested and Urged to Make Free Use of These Columns for the Discussion of All Questions of Interest to Carpenters and Builders

Sleeping Porch Window to Drop into Pocket

To the Editor:

New York, N. Y.

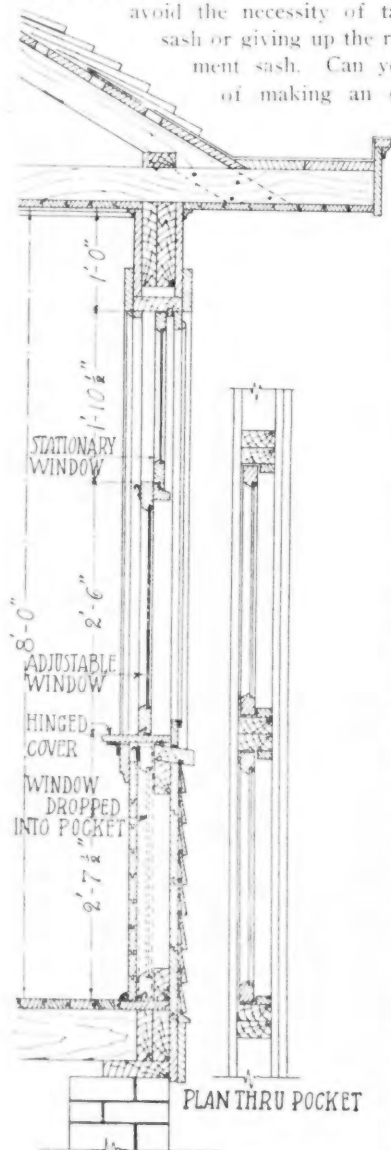
The writer reads all of the copies of your magazines that come to this office, and notes with interest the advice that you are able to give some of your friends that are up against difficult propositions.

I am figuring on making a porch enclosure but desire to avoid the necessity of taking down the winter sash or giving up the room necessary for casement sash. Can you suggest any method of making an enclosure of this kind

where the sash could be dropped into a pocket? The porch is 8 feet from floor to ceiling, and if necessary there could be a stationary top sash, and the rest movable. This would also obviate the necessity of taking down the screens.

N. E. LEVY.

Answer—In response to your request we take pleasure in sending you herewith blueprint showing working details of a storm-proof sleeping porch window. This arrangement is similar to that used in street cars. In fact, our architect got his inspiration for this drawing from a Chicago Cottage Grove car. The lower sash can be raised a few inches, permitting the hinged sill or pocket cover to be turned up; then the sash drops out of sight into the pocket. Notice that the bottom rail of the sash is rabbeted to keep out driving rains. The lower outside



Details of Sun Porch Window that Drops into a Pocket.

edge of sill cover is also protected by means of rabbet and a weatherstrip.

The upper sash is stationary.

With a window of this kind, the sill must be about 1½ inches higher from the floor than the height of the lower sash. In this case, a 30-inch sash is used and sill is 31½ inches from the floor which is not too high for the privacy one desires in a sleeping porch.

EDITOR.

Rutherford System of Barn Ventilation

To the Editor:

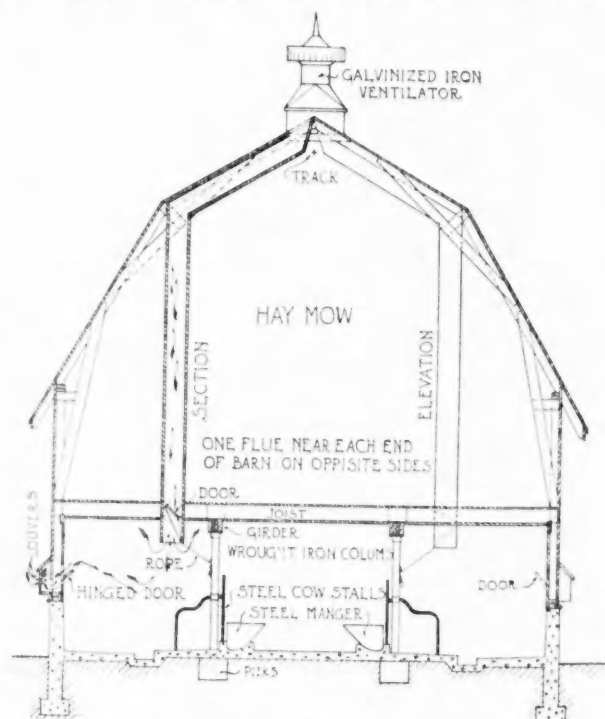
Winnipeg, Man.

Kindly explain what is meant by the Rutherford system of ventilation.

SAMUEL BLACK.

Answer—The Rutherford system of ventilation is used a great deal in Canada and the more northern country. The fresh air enters the intake flues just above the ground level, turns downward, passes inside the stable, and then rises. The outside is protected by a little slanting roof and louvres. On the inside a partition of concrete or wood rises above the floor level to keep the dirt from filling the flue, and to direct the entering air upward. Lids should be provided for closing the intakes when necessary.

The outtake flues start at the ceiling and pass thru the ridge to a metal ventilator. The outlet flues are controlled by means of dampers, pivoted in the center and regulated by



Cross Section of Barn Showing Details of Rutherford System of Ventilation.

a cord. These dampers should fit well. It has been found best to close entirely some of the outtakes in very cold weather, rather than to partially close all. In the latter case the flues would not handle enough air to keep them warm, and they would condense the moisture in the outgoing air, and fill with frost, and would then drop badly with the next rise in temperature.

H. M. WARD.



One Out of Many

Sacramento, Cal.

Editor AMERICAN CARPENTER AND BUILDER:

The February (Farm Building Number) of the AMERICAN CARPENTER AND BUILDER came in due time. As I have always been something of a farmer as well as a builder, I want to tell you that this article by Farmer Shearer somehow appeals to me as being one of the finest things I have ever read.

C. E. DAILEY.



Don't Scoff but Take a Hunch

To the Editor:

Cresco, Iowa.

I have just received my "A. C. & B." and, as very little escapes being read and re-read, I read Mr. Noble's noble explanation of how shingling is done in the west.

Now I am not a globe trotter, but have been on the Pacific coast and have seen the western wind blow; but it is not as stale as some of the eastern wind that has been blowing about western shingling. I was in Seattle in the boom before the A. Y. P. Things were moving then and a good many things got by, but I never chanced to see shingles put on as explained by Mr. Noble. I have seen several fast shinglers work and have no reasons to doubt what Mr. Pierce claims.

I only average about 20 or 30 M shingles per year, and yet can put on a bunch in 22 minutes. Now would it be unreasonable to think that if I were to do nothing else and do it every day in the year, that I could put on a bunch in 15 minutes?

Now if my eastern friends will take a little advice, they will get out of the rut. Don't be jealous of the man who has one

on you. Be proud to think some one has accomplished something; and instead of trying to pull him down, try to come to his level, and you and he will both be better off. Rig up a pair of shoes, a shingle seat, and a gauge; and give them a fair trial, and then you will be in better position to pass judgment on your superiors at shingling.

G. A. DAWS.



A Good Word for Our Directory

To the Editor:

Crossville, Tenn.

I have been a constant reader of your paper for the past few years, and think it the grandest ever published of its kind. Your last edition which has just reached me, is certainly a great help to us carpenters and contractors, inasmuch as it tells us where we can procure so many different things. That Directory alone would be worth the subscription price.

P. E. JARRETT,

Of Jarrett & Bilbrey.



Wants to Build Creamery Refrigerator

To the Editor:

Imlay City, Mich.

Could any of the brothers give me any instructions as to how to build a brick refrigerator suitable for a creamery?

J. A. DEAN.



An Inexpensive Buffet

To the Editor:

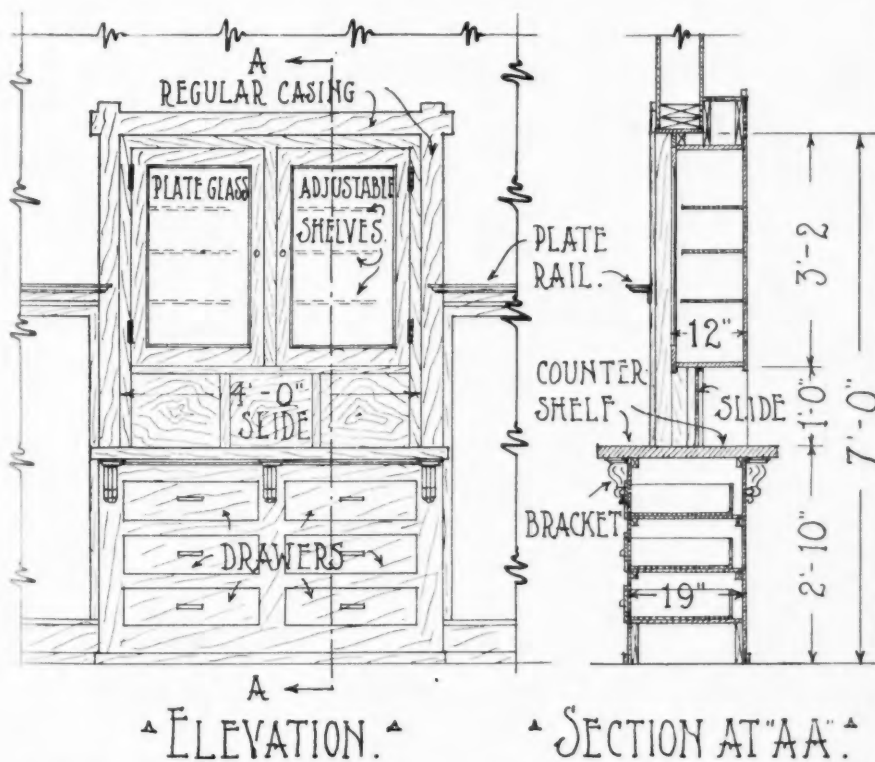
Oak Harbor, Wash.

Enclosed you will find a picture which I trust you can make use of. It is a buffet I built in a bungalow here. The details show how it is constructed.

Your paper is worth a good deal to me, and I don't think I could get along without it. Seems to me it ought to be a weekly paper, as it always seems such a long time to wait between issues. There is not much work around here this winter, but I try and keep busy doing repairing, making furniture, tanks, etc. I am also building a shop for myself.

Wishing yourself and brother carpenters good luck, I'll saw off here.

OTTO VAN DYK,
Contractor and Builder.



Elevation and Section of Buffet Built by Mr. Otto Van Dyk at Oak Harbor, Wash.
The Buffet is of the Built-in Type.

The Handsome Appearance of Buffet Built Into Wall of Bungalow is Shown Here.

Builder and Dealer

To the Editor:

Romney, W. Va.

I notice a great deal about winter work which I enjoy reading. I am a young contractor and make concreting a specialty, which I find is a great deal more profitable than carpentry in my neighborhood; but I also do a good deal of building. I am really glad to see a few bad months, as that gives me a chance to get all my equipment in good shape for the summer. I have laid something over 32,000 square feet of protex this past summer, built three large barns, three large porches for the Deaf and Blind School of West Virginia, besides other smaller jobs, such as foundations, cellar floors,



House Built at Romney, W. Va., by Mr. R. C. Clower. He Contracts for Work in Winter so Plans Can be Drawn During the Dull Season.

walls, etc. I have a big and little mixer, which for my use I don't think can be beat.

Enclosed you will find a photograph of a house I built a year ago last summer. I try and contract for my work in the winter, so I can draw my plans and make out bills, etc., while the weather is bad. I also deal in all kinds of building materials, which makes me a nice little profit the year around.

R. C. CLOWER.



Home Made Concrete Silo Forms

To the Editor:

Cache, Okla.

I know there are small builders, and some others, that would be interested in a convenient form and outfit for building silos and other circular buildings of concrete, including tanks, granaries, chicken houses, cisterns and even circular barns. They all may be made with practically the one outfit, by using a form of the different radius and arranging the staging to suit; and all with small cost. I built a silo for myself last year and have the ensilage nearly fed out.

It is 14 feet in diameter, 34 feet 4 inches from floor to top of wall, 5 feet in the ground; walls have 16-inch footing and are 8 inches thick in the ground and 6, 5 and 4 inches above ground. I used 142 bags of cement to build it, including a plaster coat on the inside and a cement floor. There is not now a crack or flaw in it. Was built in courses 8½ inches high in sections about 5 feet long, one right after and on top of the other, as high as five courses a day.

The reinforcing is No. 8 wire in each course, with two ⅝-inch rods just above the footing and one at the top of the ground and again at the top of the wall.

There is a 1¼-inch gas pipe at each side of the continuous door to which the reinforcing wires are attached. Also ⅝-inch ladder irons across the door, bent around them, and eyes of the same are placed ⅝ inch below half-way between them in which to hook removable rods to complete the ladder.

The doors are made of two thicknesses of flooring, nailed to 1½ by 1½-inch cleats with building paper between them, and are held to the permanent ladder irons with bolts on which are lugs and thumb nuts.

The outfit for building cost me nearly \$60.00 for material and blacksmithing, exclusive of my own work. It consists of a center shaft, or column, of 3 inch gas pipe, 44 feet high, set on a solid footing and held in place by eight guy cables (four above and four below the hoisting arm). Each has a turn-buckle for adjustment to plumb. It carries the hoisting arm and the form, or mould, and the staging which moves up as the work progresses. By using a double and single block, the staging can be lifted by two men and the form by one. The center column has 11/16-inch holes drilled in it every 8½ inches, thru which to put ⅝-inch rods, about a foot long, to make a ladder and to hold the form and staging. My center column is in 10-foot lengths for convenience. It is 3 inches in diameter and has slip joints; but it should be screwed together, and I would recommend larger pipe, especially if it was to be used for large buildings. The ordinary gas pipe joint will not do as it has to be the same size all the way up in order to let the collars pass along it.

The form is an open-ended box about 5 feet long, made of sheet and angle iron to conform to the circle desired, and opens and closes like a pair of tongs; with a level locking device and a movable brace to keep the faces perpendicular when closed. It is carried on an arm that slides and turns on the center shaft and should be braced with rods on which are adjusting nuts so as to keep it in proper alignment, and should be counter-poised to make it swing easily. To operate it after everything is ready, close the form and place where wanted, fill and tamp; or rather tamp as you fill. Then release the form and swing around nearly the length of itself, close and fill again, and so on around. When one round is completed, raise the form and place the pin under it in the next hole above the center shaft and after placing the reinforcing, go around again. In case you are working up to a door form, it will be necessary to raise up and swing back to the other side before commencing another course. To use in the ground, remove the outside section of the form and let the concrete be tamped against the ground, whenever possible.

After the walls are high enough, place the movable staging and then you are ready to go to the top.

Plaster the inside of the walls and paint with cement and water as the staging is lowered to suit. Stucco, or splatter dash the outside, or leave it as it is, if you like.

By taking a little care and using the trowel occasionally on the outside, it can be made to appear very well without any other finish.

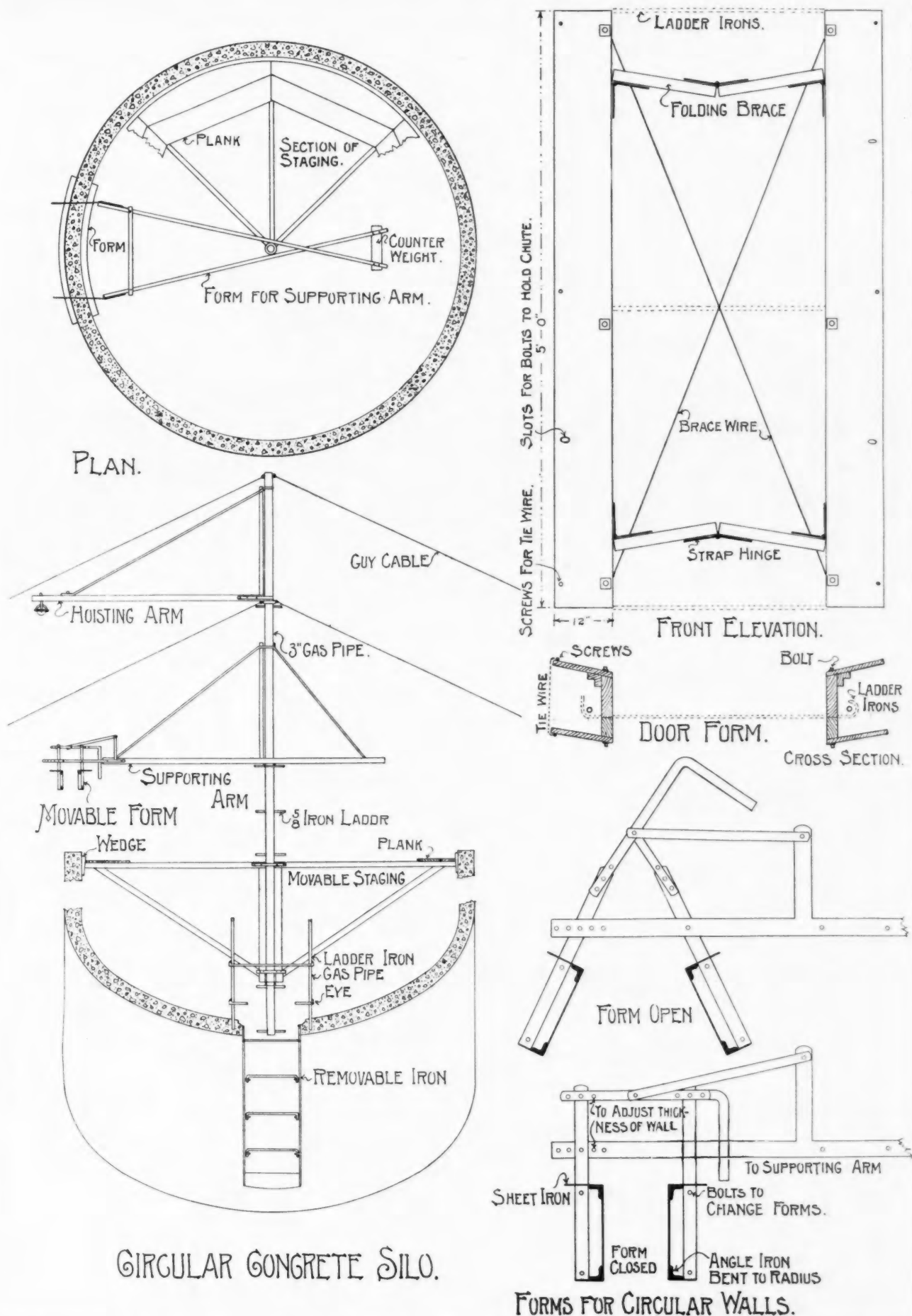
The door is two 5-foot sections, and when the walls are at the top of the second section, the lower one is removed and placed on top, and so on to the top. They are made in a front and back section and bolted together. The front section is removable in order to receive the ladder irons and eyes and hold them in place. It makes a 6-inch wall all the way up. Bolts are placed at the sides of the door, to which are bolted strips to fasten the chute. It can be made of either sheet iron or wood.

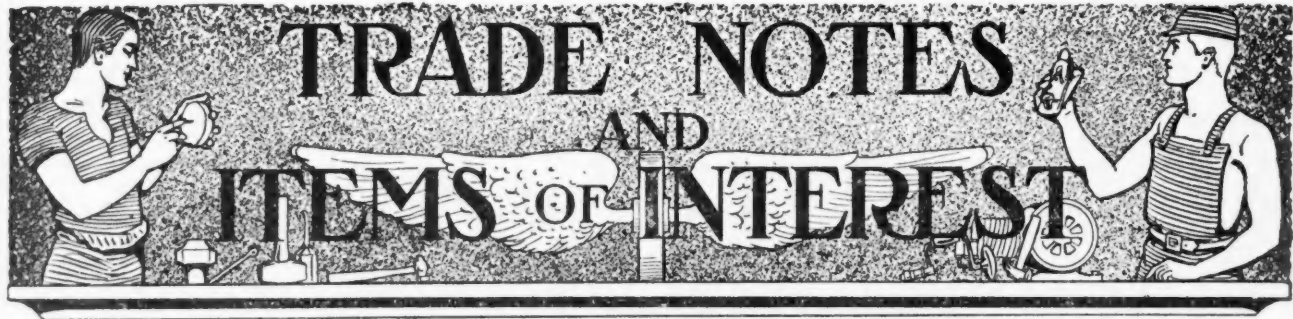
To change the size of building, it is necessary to use forms to conform to the radius desired, and change the length of the supporting arm. The locking device, etc., can be used on all sized buildings.

The complete outfit can be moved about from place to place on a light wagon. By using the blocks that hoist the form and scaffold, the center shaft can be raised in place. Three men and one boy make a nice force for operating. One man at the form, one on the scaffold to carry concrete, one to mix the concrete, and the boy to fill buckets and help on the ground.

The drawings, I think, will enable anyone with the help of a mechanic, and the exercise of a little ingenuity, to make an outfit to build any circular wall of concrete, cheaper than they can use wood forms, even if they build but little.

CHAS. B. JARVIS.





Thru this department the Editors aim to keep builders, contractors, carpenters and architects in touch with what their friends, the manufacturers, are doing for them in new or improved tools and machinery, methods and materials—pertaining to building. These items are offered here as interesting information for our readers; they are not advertising. Take full advantage of these Reading Months to write for catalogs and booklets, and become thoroly familiar with these Improvements and New Goods.

Church Beautifully Finished in Magnesia Cement

Rev. Howard Ganster and the Vestry of Christ Church, Waukegan, Ill., in building the chapel pictured below, set out with the idea of producing a piece of work along the lines of old English type of architecture, that would excell anything in the vicinity of Chicago. With their work completed, it is stated by expert judges that they not alone attained their object but in the rich effect produced, have exceeded even their own expectations.

The memorial window in the center was imported from England and placed by Spaulding & Co., the altar, pews, rail, etc., were made by the American Seating Company; the carpet, runners, etc., are from Marshall Field & Co.

The walls, pilasters, main and side arches are made of San-A-Bestos plaster, a fireproof indestructible oxide chloride mixture, applied one-half inch thick over wood lath. It attains the hardness of genuine stone in a few hours. The

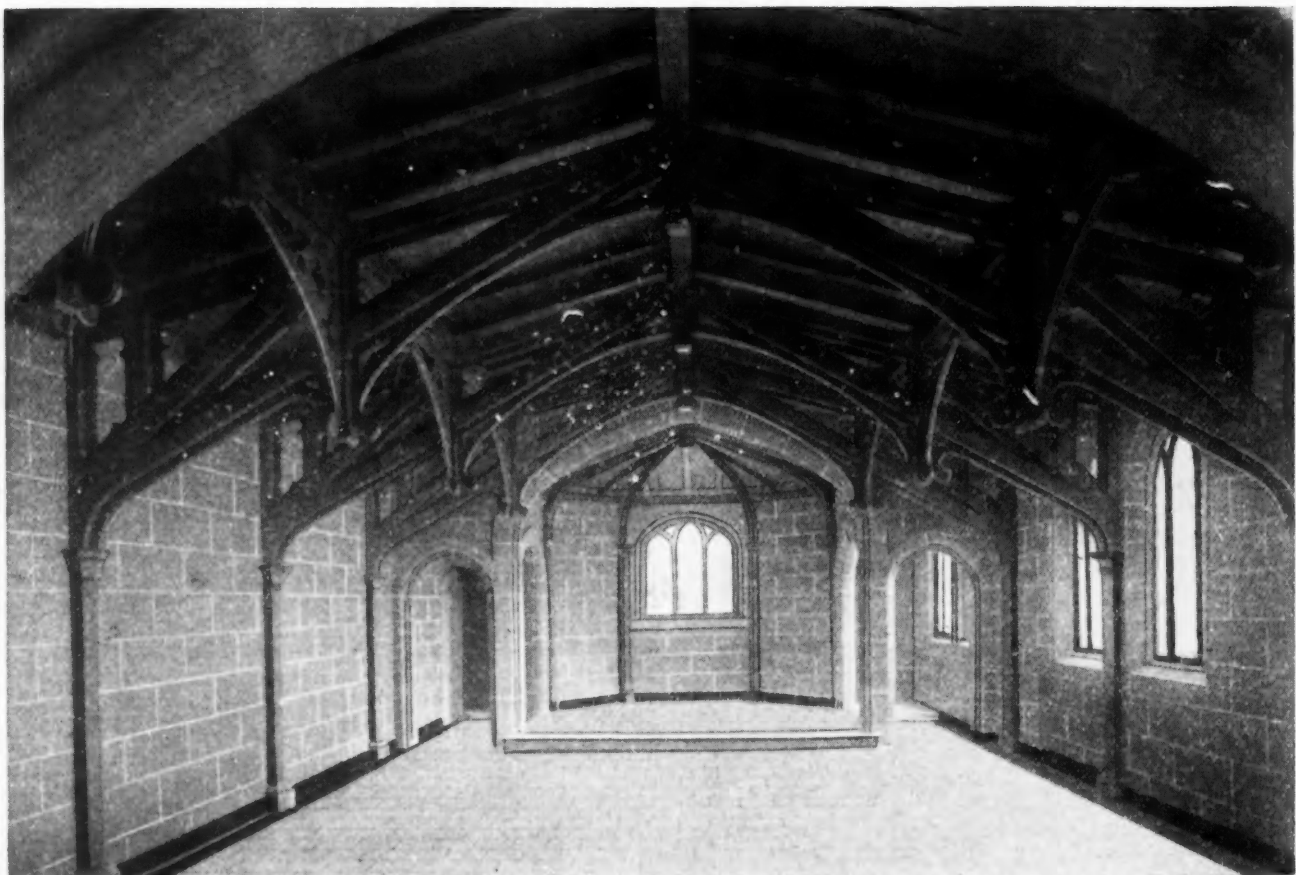
color used is a true reproduction of brown stone; the joints were cut with a motor driven carborundum wheel to a depth of one-quarter inch; the blocks measure 12x24 in. The arches were built up on 4x4's. The various members shown were molded and run in place by hand. Special attention is called to the trueness of the lines in all these arches.

With this material massive and artistic effects are produced at a moderate cost and at a great saving in structural weight.

The floors and base are of San-A-Bestos Sanitary Flooring Material. The base and border are of black and the field grey, which is scored off to represent marble blocks measuring 9x18 in.

These applications of magnesia cement materials are new and the results produced prove that they are worthy of your consideration. San-A-Bestos is furnished by Franklyn R. Muller & Co., Waukegan, Ill.

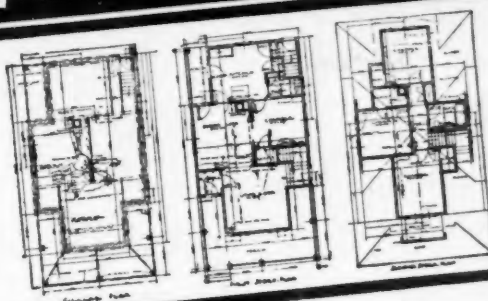
(Trade Notes Department continued to page 120.)



Chapel of Christ Church, Waukegan, Ill., with Walls, Floor and Arch Beautifully Finished in San-A-Bestos Plaster. Executed by Franklyn R. Muller & Co.

FREE

300 Certified Plans— Standard or Ready-Cut! Send Coupon!



for our

Write TODAY 2 FREE Plan Books



Under date of Oct. 26, 1915, Chas. F. Spann of Oskaloosa, Iowa writes:—"I can recommend your materials for their quality, your price as being most reasonable and your promptness and square dealing as worthy of commendation. It is a pleasure to work such fine material."

Send now for our two plan books—**Ready-Cut Homes**—material cut to fit. **Standard Homes**—material in the standard way. Over 300 illustrations, floor plans, color schemes. All at exact prices. **Both books free!** Do your building at our "**Mill-to-Consumer**" wholesale prices—on any method you like. You add to your profits when you

Build The Gordon-Van Tine Way—at WHOLESALE Prices

We sell through **no agents or dealers**. From catalog **only**. Lowest selling expense strips our prices to **rock-bottom!** Not only have we **100,000 satisfied, enthusiastic customers among home owners** but over **10,000 contractors, carpenters and builders** also buy regularly from us. You do the same. Everything sold subject to **your entire satisfaction or money back**. Our plans contain hundreds of **ideas, new wrinkles and home suggestions**. **Highest Quality; lowest prices**. Distinctive homes with **class** to them—cosy bungalows, stately dwellings, comfortable cottages! Over 300 plans that will please your people. Every plan **proven**; all built hundreds of times. Makes no difference where you live: we ship anywhere. Also check coupon for our 156 page, illustrated book of

5000 Building Bargains

Packed from cover to cover with money-savers! A veritable **Builders' Encyclopedia** and price-maker! Rips the bottom out of building material costs and millwork prices. **Everything you need at big savings**. Roofing, Hardware, Paints, Varnish, Glass, Wall Board, Nails, Screens, Porches, Doors, Windows, China Closet Doors, Flour Bins, Pantry Drawers, Bathroom Fixtures, Door Panel Mirrors, and over 5000 other items. Shipped anywhere. **Safe delivery guaranteed**. Prices all wholesale! Contains the answer to every building need. Send for it! **Free!** Use the Coupon.

Gordon-Van Tine Company

In Business Half a Century!

807 Federal St., Davenport, Iowa



On Nov. 12, 1915, John Coffey of Mt. Sterling, Ill., wrote us:—"The car of millwork arrived and everything checked out correctly. I could hardly believe that a car could be gotten through in such short order. The quick service and fine material has made me a saving of at least 25% on this job."



Gordon-Van Tine Co., 807 Federal St., Davenport, Iowa

Please send me free the books checked.

<input type="checkbox"/> Building Material Bargain Catalog	<input type="checkbox"/> Standard Home Plan Book
<input type="checkbox"/> Lumber, Millwork, Hardware, Paints, etc.	<input type="checkbox"/> Barn and Out-Building Plan Book
<input type="checkbox"/> Ready-Cut Plan Book	<input type="checkbox"/> Garages—Ready-Cut and Portable
<input type="checkbox"/> Roofing Samples	<input type="checkbox"/> Summer Cottages

Please send me specific information about

Mention here articles in which you are most interested.

Name.....

Street No.....

City..... State.....

Occupation.....

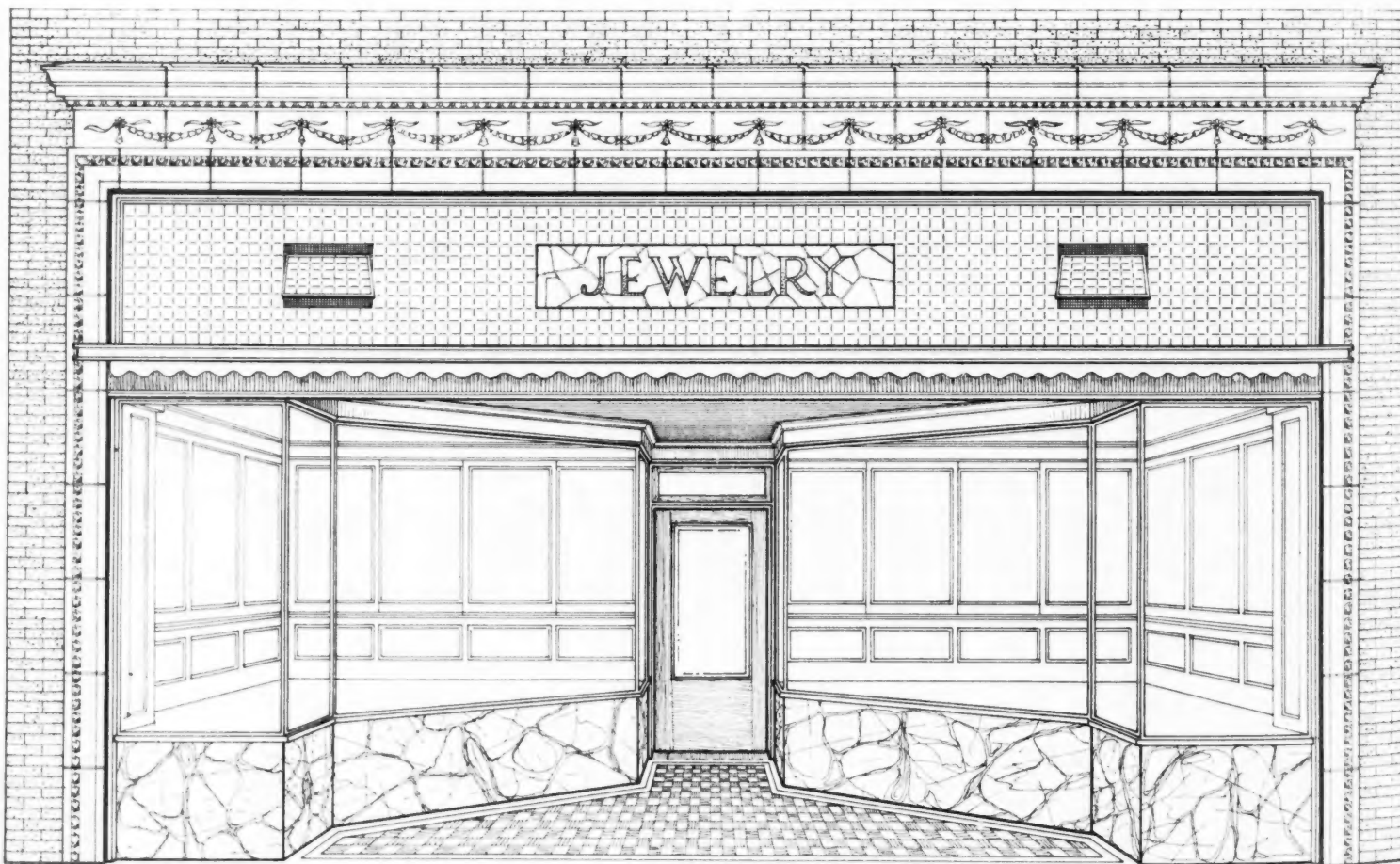
MODERN STORE FRONTS

Their Design and Construction

By
Francis J. Plym, President
of KAWNEER MFG. CO., NILES MICH.



NOTE: Mr. Plym desires this Department to be of greatest practical benefit to contractors and builders. He will gladly answer letters of inquiry, giving any special store front information desired. He has also prepared a very instructive illustrative booklet on modern store fronts which he will mail free of charge to any architect, contractor or builder desiring a copy. Under this heading will appear a series of 17 typical store front designs, also a series of 17 plates of half size details of Kawneer store front construction.



TYPE N° 10

TYPICAL ELEVATION OF JEWELRY STORE

COPYRIGHTED BY
KAWNEER MFG. CO.

ABOVE design shows a typical Elevation of a jewelry store. The principal features are the comparatively low display windows, high bulkhead, and shallow display deck.

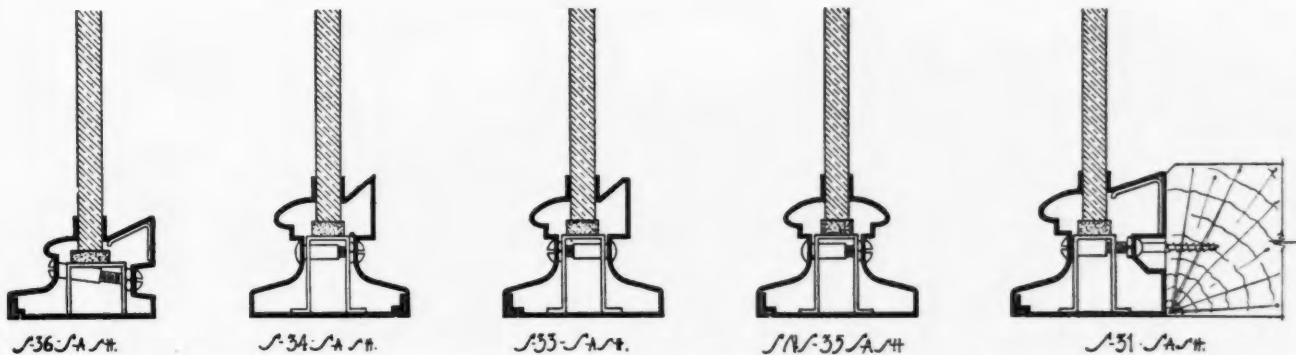
Low windows because jewelry are small objects and would look lost in windows with high plates.

High bulkhead because the delicate designs of jewelry must be brought up as high as possible for careful inspection.

Shallow display deck because several rows of jewelry can not be displayed effectively.

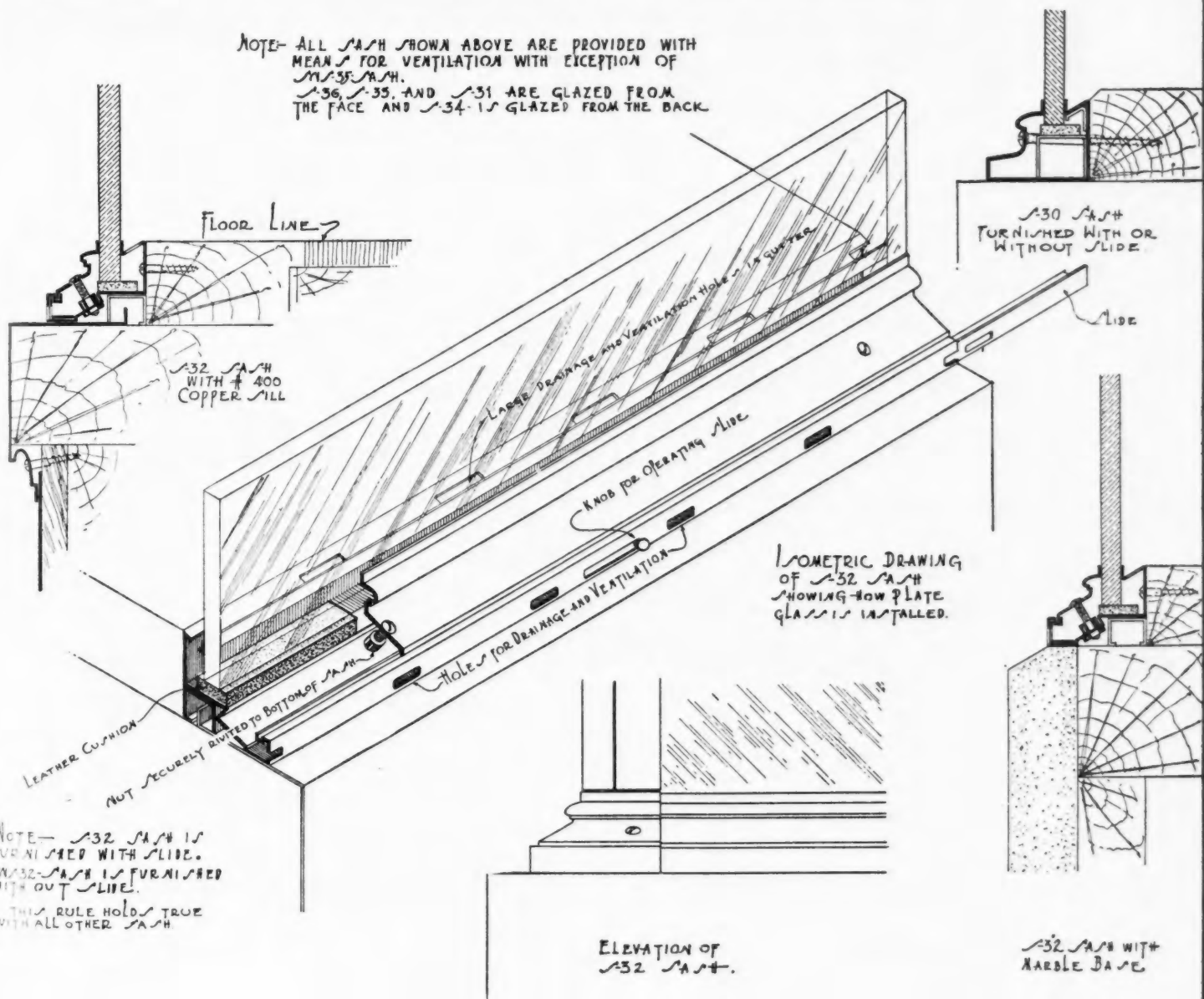
Kawneer Mfg. Co. will, from time to time, show different designs of "up-to-date" KAWNEER Store Front designs, featuring various types of store fronts, such as jewelry, candy, clothing, millinery, and department stores, etc.

We will also show various detail plates of our new construction. The details on the opposite page, drawn half full size, show the various constructions of KAWNEER Metal Sash. Interested readers are asked to cut these out, as they will prove to be a valuable reference asset to them in the future.



HALF SIZE SECTIONS OF VARIOUS KAWNEER STANDARD SASH.

NOTE- ALL SASH SHOWN ABOVE ARE PROVIDED WITH MEANS FOR VENTILATION WITH EXCEPTION OF #36, #35, AND #31 ARE GLAZED FROM THE FACE AND #34 IS GLAZED FROM THE BACK.



NOTE- #32 SASH IS FURNISHED WITH SLIDE. #32 SASH IS FURNISHED WITH OUT SLIDE. THIS RULE HOLDS TRUE WITH ALL OTHER SASH.

PLATE No. 2



KAWNEER MFG. CO. ~ NILES MICH.

MANUFACTURERS OF KAWNEER PATENTED STORE FRONT CONSTRUCTION



kawneer
STORE FRONTS

Dinner Given By Chain Belt Company to Sales Force

The accompanying illustration shows the dinner that was given by the Chain Belt Company, Milwaukee, to its sales force on the evening of January 3, 1916.

After the dinner, Mr. William A. Heartt was presented to the assembled salesmen as the new Assistant Sales Manager. Mr. Heartt comes to the company from a position with the Sand Mixing Machine Company of New York. He has been in charge of their western territory for the past five years.

The spirit of the meeting was to develop the Chain Belt business along lines of mutual co-operation between manu-

facturers and customer by sending out trained and well organized forces into the field to insure the highest possible grade of service. It was announced during the evening that additions to the already fine factory facilities of the company were being made which would make possible the handling of the large volume of business which the national outlook gives promise of.



Ceil Board for the Inside Finish of Farm Buildings

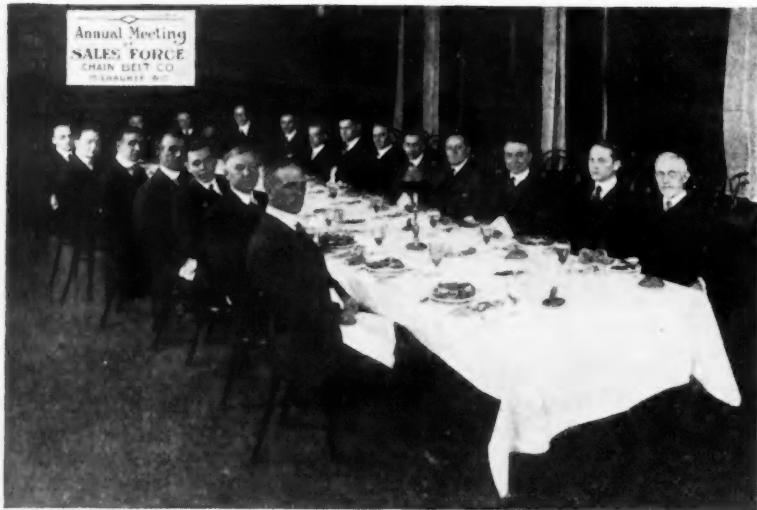
Ceil Board is well adapted for use in farm buildings as it may be had in a variety of finishes and is waterproof. They tell us that this material is now very popular as a lining, sheathing and roofing material for small out-buildings, being used to a very large extent for the building of poultry houses. It is claimed to be unaffected by the constant exposure to the elements. It comes in large sheets and is much more quickly applied than ordinary sheathing or siding lumber.



Blue Prints to Cost More

Of interest to architects, contractors and builders is the information that the price of blue prints and blue printing will probably be materially advanced in the near future. This is due to the advance in chemicals and all rag stock, and also to the big advance in papers. Manufacturers of war materials are now using large quantities of sulphite papers.

(Trade Notes Department continued to page 126.)



Chain Belt Co. Banquet Jan. 3, at Milwaukee.

CONCRETE FOR PERMANENCE

Concrete for the Farm

Concrete protects the farmer and his stock against fire, weather, vermin and disease. It is permanent, easily cleaned, lowest in ultimate cost, and gives lasting satisfaction.



Atlas Service

Let us help you develop more business in farm work. Send for the Atlas Book on Concrete Construction for the Home and the Farm. It gives complete specifications for different farm buildings—selection, mixing, pouring and finishing. We will also send you the Contractor's Atlas free on request.

The Atlas Portland Cement Co. 30 Broad Street, New York

Chicago

Philadelphia

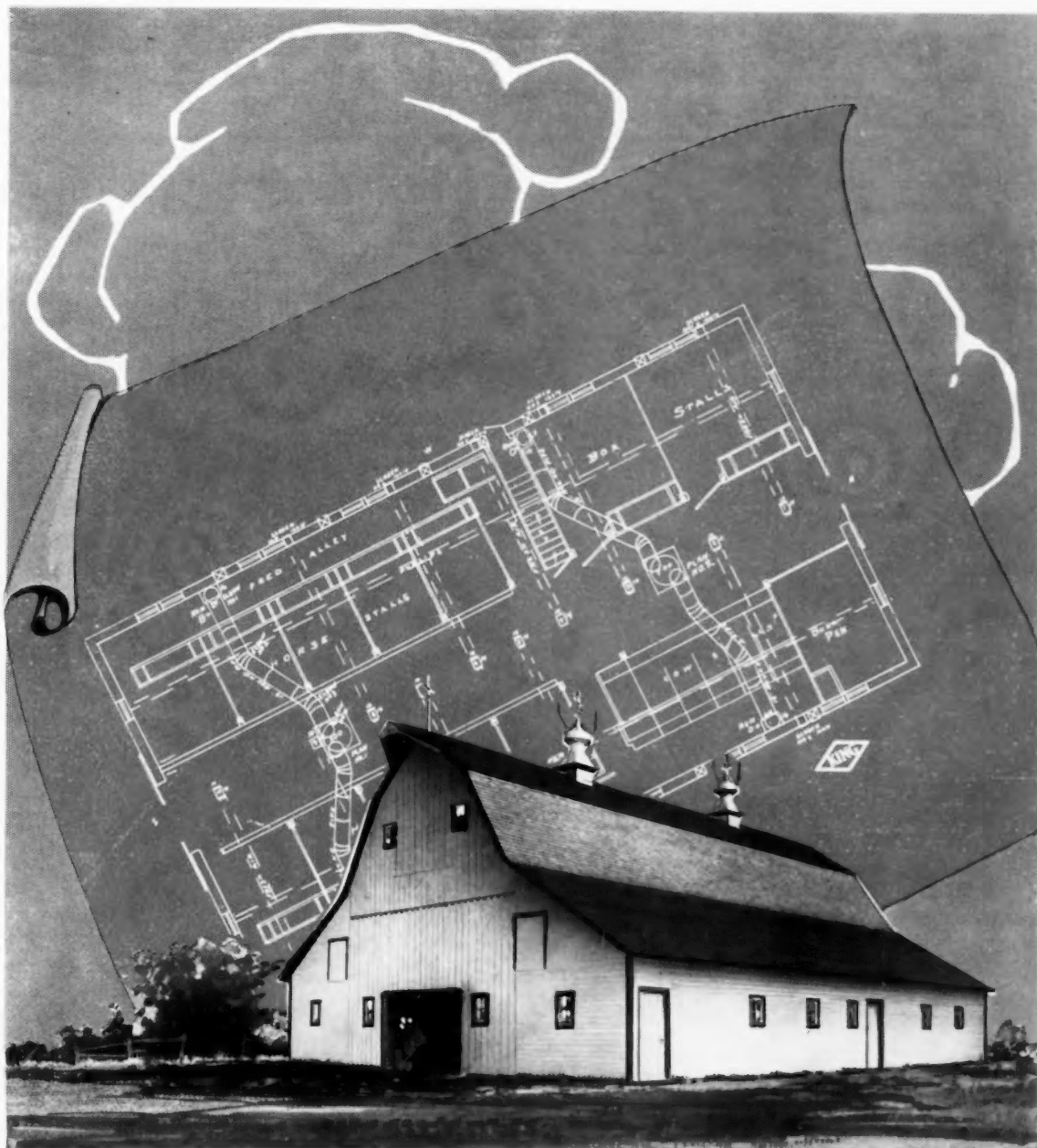
Boston

St. Louis

Minneapolis

Des Moines

ATLAS PORTLAND CEMENT
"The Standard by which all other makes are measured"



Every Barn Needs a Different Plan of Ventilation

The KING Ventilating System consists of three units, the KING Aerator on the roof, the Foul Air Flues and the Fresh Air Intakes.

Just as no two barns are exactly alike, neither are any two conditions in barn ventilation the same. How to handle those conditions in the most practical way comes from knowledge born of practical experience.

Our skilled experts study the actual conditions in each barn and then design a KING System to get the best ventilation in all parts of the barn.

(Continued on next page)



Woodlawn Farm, Owatonna, Minnesota—All Buildings

Beauty and Architecture Combined with Service

Woodlawn Farm is a typical Minnesota Dairy Farm.

The owner, Mr. George M. Flinn, has paid for Woodlawn Farm, which consists of two hundred and fifty acres, from the profits of the farm itself. Not only the cows, but the horses, hogs and chickens are all supplied with plenty of fresh air by means of properly planned systems for each building.

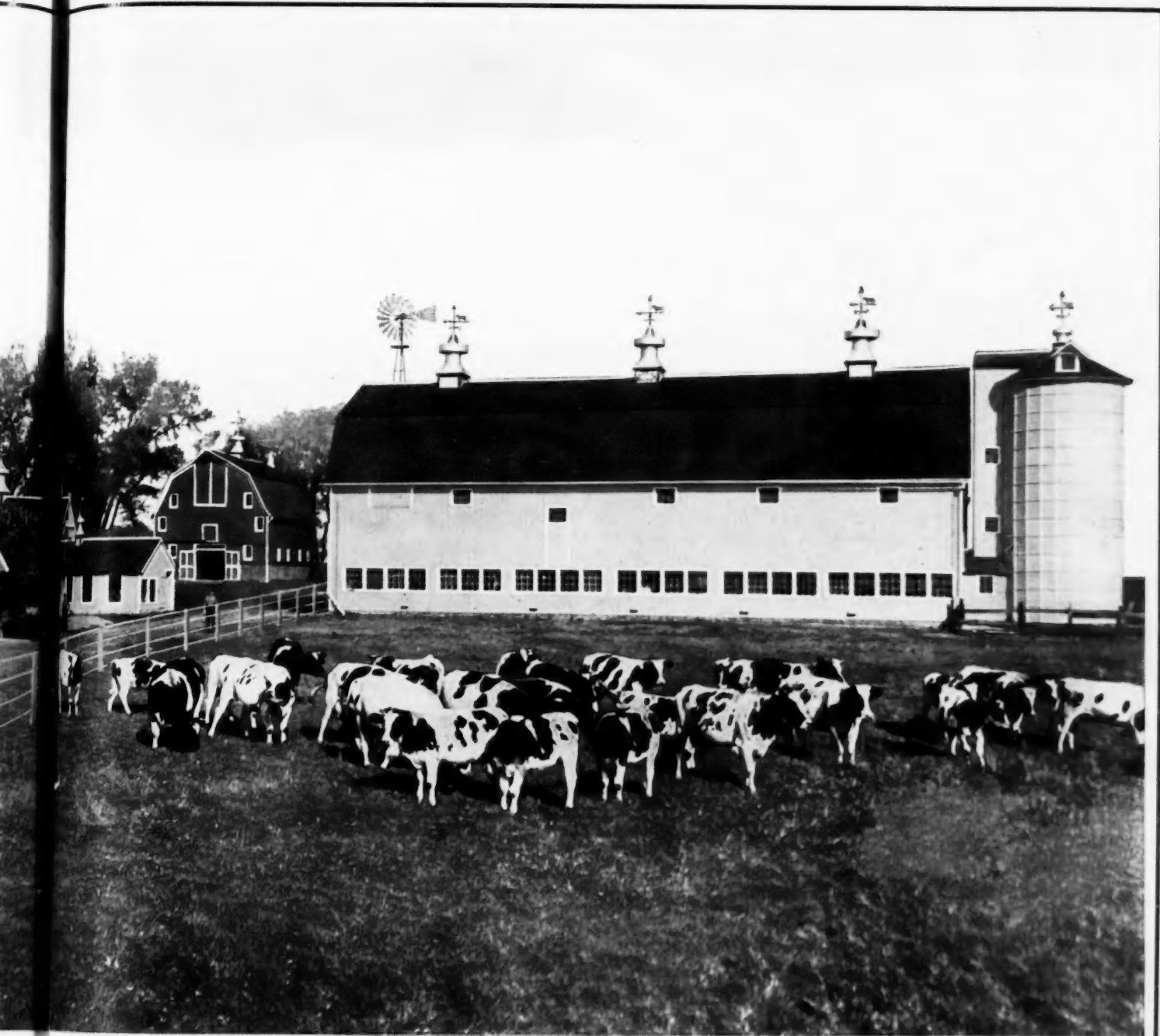
The cow barn, which is the largest, houses his full-blood herd of Holstein-Friesian cattle, and only a part of the fine herd is shown in the picture.

The red building in the background is the horse barn, and this is also properly ventilated.

The low building next to the left is the hen house, and the chickens all get fresh air in abundance and still have a warm place to live in.

While every one thinks of the hog as a dirty animal, it has been proved that a hog will be clean if it is housed in a clean place. So the hog house on Woodlawn Farm is kept clean and sanitary and the hogs get plenty of air and still there are no drafts.

The building with the milk cans in front of it is the dairy house; here the milk is skimmed and all the milking utensils are kept, so that in order to keep them in a sanitary condition this building is equipped with a ventilating system designed especially for it.



Buildings Thoroughly Ventilated with KING System

The King Board of Experts

A contractor and builder must know something about each part of his work, but there are many departments that he must turn over to others who are experts on that particular subject.

You no doubt have a heating expert figure on the heating apparatus; a painter for the painting, and so on for each part of the building.

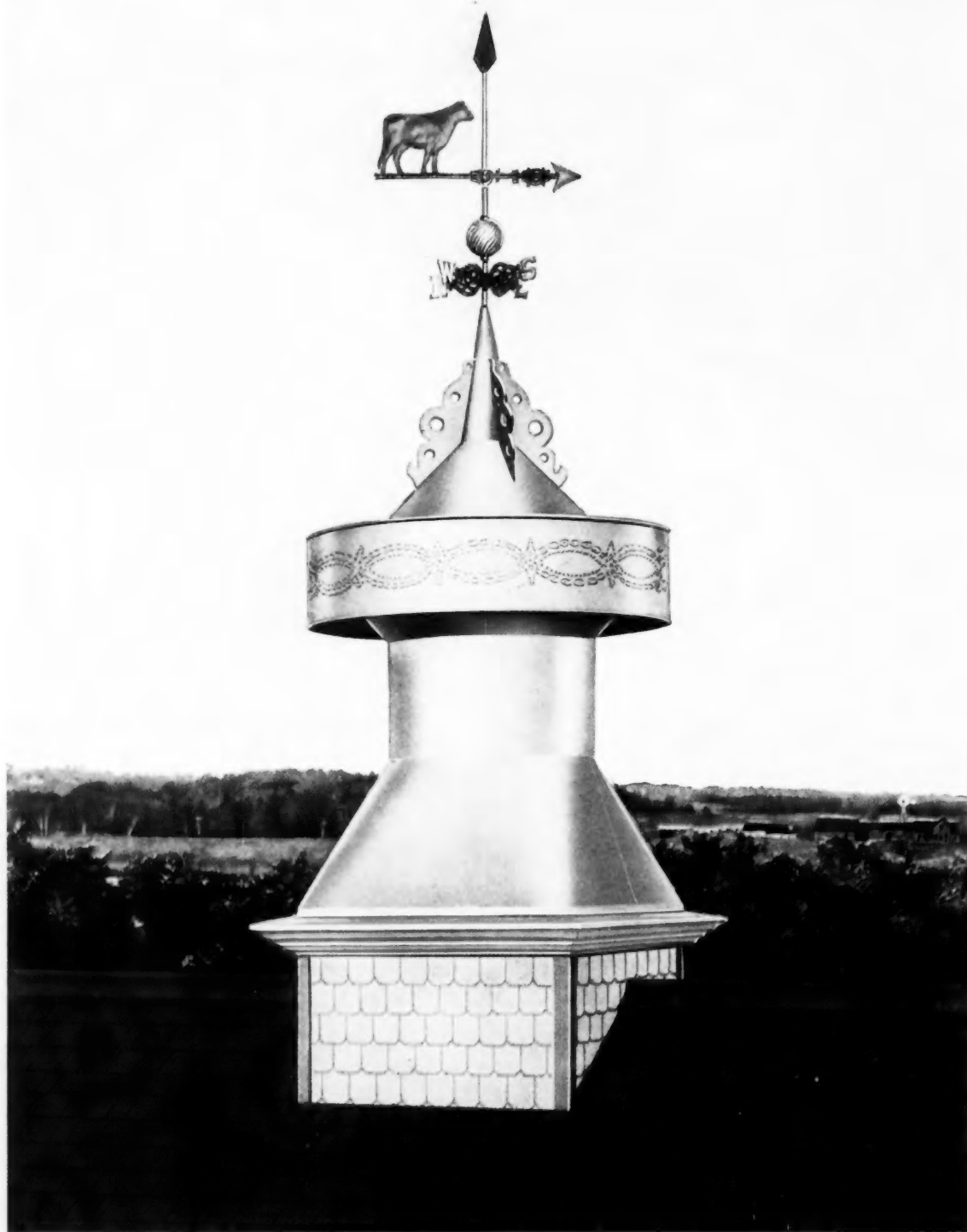
Just as each of these are experts in their line, so are the KING Board of Experts the recognized authority everywhere on the subject of Ventilation for farm buildings and creameries.

As stated before, there are three units in the KING Ventilating System, and while there are

thousands of barns being equipped with the complete KING System, there are still thousands of barns that are equipped with the KING Aerators only.

The reason that the contractor, and owners of buildings recommend and endorse the KING Aerator is because it is the first part of the KING System, so that any time in the future the other units can be added without making any changes on the roof.

The contractor always prefers to use the KING Aerator, for it adds so much to the beauty and architecture of the building, and thus gives him a prestige and helps him secure other contracts.



King Aerator

The First Part of the KING System of Ventilation

Made of the very best grade of specially prepared galvanized steel, not the ordinary galvanized material. The steel used in KING Aerators and the KING Ventilating Systems is made especially for that purpose, for we manufacture nothing else, and therefore have this steel especially prepared with the greatest rust-resisting qualities.

The KING Aerator combines Strength, Durability, Efficiency and Architectural Beauty.

You should have one of our catalogs showing illustrations of barns in many states; this will be mailed to you FREE. You can also get the Prof. King Book on Ventilation, consisting of 140 pages for 10 cents to cover postage and packing.

KING VENTILATING COMPANY

1120 CEDAR ST.

OWATONNA, MINNESOTA

MODERN BARN



Modern Barns *A LIVE ISSUE* with BUILDERS

The barn-builder of today cannot depend wholly upon his own judgment as to the barn he should build.

He must know the farmers' need, and be familiar with barn problems.

He must know how and where to save money and labor for his customers; how to make his buildings sanitary and comfortable. He is building his reputation as well.

For these reasons every contractor should specify our

SANITARY BARN EQUIPMENT

We aim to meet all modern requirements in the best possible way. Thousands of satisfied barn-owners throughout the country testify to the success of our efforts.

The views of the barns and interiors on this page are of the well-known Jennings Stock Farm, Towanda, Pa. This farm is equipped throughout with our Sanitary

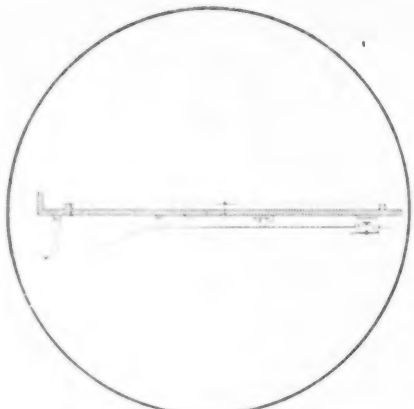
Get our catalog
"Modern Stable
Equipment" for
study and reference.
Full of helpful sug-
gestions, and com-
plete details of our
equipment.

MODERN STABLE EQUIPMENT

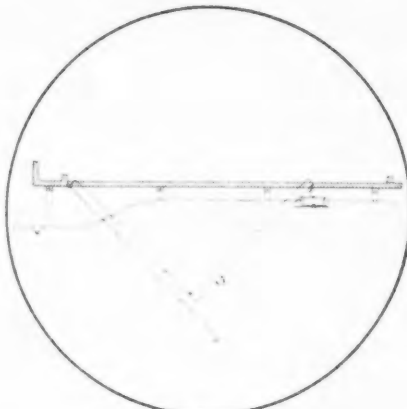
Our goods are
sold strictly on
their merits, and
we guarantee them
in every respect.
It is up to us to
make good for you.



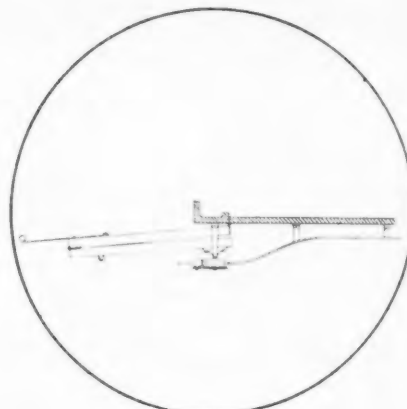
Write for Agency proposition to Carpenter-builders
Glor Bros. & Willis Mfg Co.
ATTICA, NEW YORK



Section Thru Doors, Closed.



Doors Swung Out Partly Open.



Doors Fully Open and Out of Way.

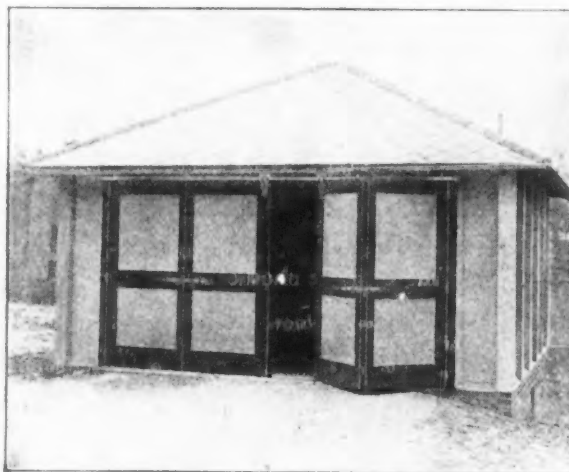
"Topping" Garage Door Hangers

Garages are being made smaller all the time for several reasons. In the first place there is the cost of construction, which will vary directly with the size of the building. Also many private garages are heated by pipes from the house furnace and it will cost less to heat a small garage than a large one.

There are many ways of attaining this result and cutting down the waste space. The design of doors shows the efforts that are being made to utilize all the space. The accompanying illustrations show a door that is being placed on the market that takes up no room in the garage and still cannot blow shut and break lamps.

The door for a single garage is made in two sections, which are hinged together. The outer edge of one of these two sections is carried by the main hinges and the other is supported

(Continued to page 130.)



Garage Doors Fold Out and Back Leaving Doorway Unobstructed.

Contractors, Builders—Exclusive Agents

Develop A Profitable Business Right In Line With Your Regular Work



THERE are plenty of opportunities for the wide-awake contractor or carpenter to add to his profits by a little extra effort. The average man who builds a barn is anxious to have every modern convenience in the way of sanitary barn equipment. You can get this business, at an extra profit, for a small amount of time and labor on your part.

SELLING EXPERIENCE IS NOT NECESSARY FRANKLIN Barn Equipment and Litter Carriers sell readily, and the contractor or builder is the man to sell them. A big demand exists for FRANKLIN products. The market is already developed. Selling experience is not necessary. Our gravity principle of construction—no springs to rust or get out of order—puts the FRANKLIN make far ahead of all others.

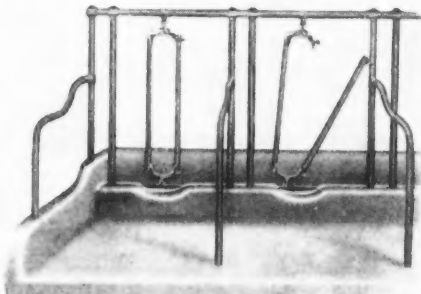
WE WILL HELP YOU TO GET MORE

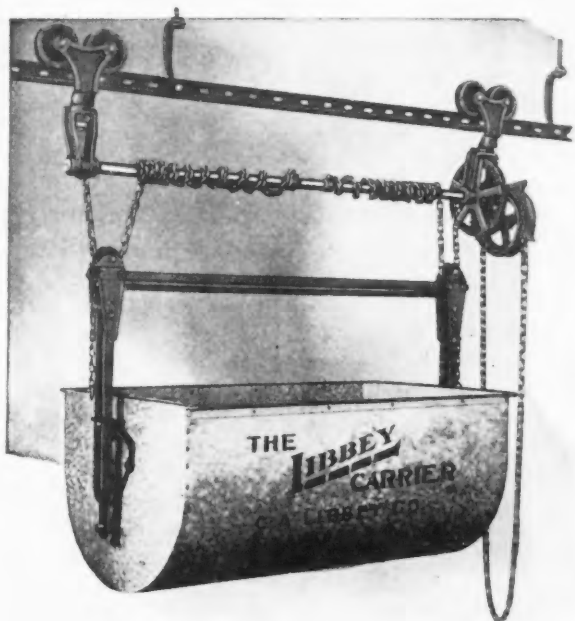
BARN-BUILDING BUSINESS IN YOUR TERRITORY Send us a list of names of the farmers in your section who intend to build or remodel their barns. We will co-operate with you with a series of strong, compelling, business-getting letters and literature that will help you clinch the bulk of the barn-building business in your territory.

EXCLUSIVE DEALERS We are looking for a man in your territory who wants to earn from \$5 to \$50 a week. Perhaps you are the man. This is a big opportunity for you if you want to be your own boss, get into business for yourself and be associated with a reliable concern manufacturing high-grade, much needed articles that readily appeal to the farmer. Build a big, permanent business of your own. It is easy to succeed with our cooperative selling organization to help you cover your territory. Write at once for full particulars. Don't delay. Your territory may be gone if you do. **Write to**



Franklin Barn Equipment Co., MONTICELLO—Box 627—IOWA





The Barns You Build—

are your best advertisement, or your worst. You are judged by the way they look, and the service they give.

If You Install

Libbey Equipment

you may rest assured that the interior of your barns could be no better and will do you proud. And the working part of the barn, the stable, and its equipment is really the most

important part to a farmer. It's his factory where he makes his money. The use of Libbey Equipment will mean larger profits.

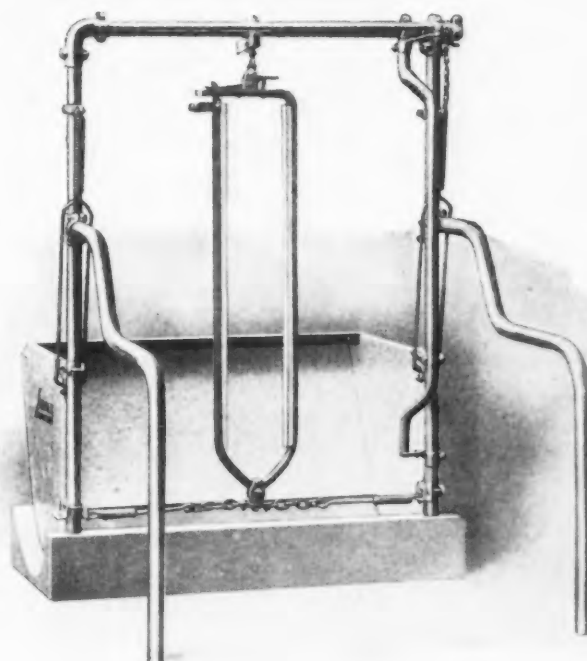
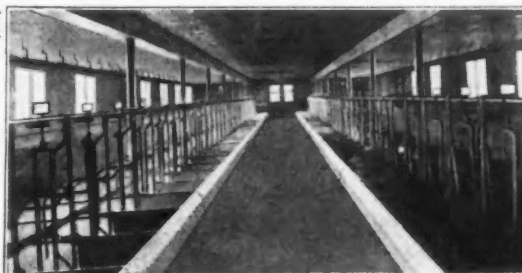
One good barn suggests another. If you build wisely and well, you will build with an eye to the future, and safeguard your reputation with the best and most practical equipment. It will pay you materially to investigate Libbey equipment.

Free Plan Service

We will be glad to furnish you with free plans and practical ideas on the general design of your barns. Simply send us a rough sketch of your plans.

**C. A. Libbey
Company**

Oshkosh - Wisconsin



Best Builders Now Demand CHIEF SUNSHINE WINDOWS On All Modern Farm Buildings

The modern farmer demands modern farm equipment—and gets it. He wants perfected, up-to-date devices and he knows that metal is taking the place of wood for window frames and casings, cupolas, silo roofs, poultry supplies and a dozen and one other farm necessities because it is cheaper and better in service. It is approved and recommended by all authorities.

That's why thousands of live farmers are now specifying Chief Sunshine Windows, Chief Cupolas, etc., for all their farm buildings. The economy, durability and general satisfaction that Chief Products insure users, have made them enormously popular and contractors and carpenters everywhere are making easy profits supplying this demand.

A New One Chief Ventilating Side- wall Windows

The latest and best type of Sidewall Window for hog houses, barns, sheds, work shops and all farm buildings where light and air are required. Absolutely unequalled for value and satisfaction in service.

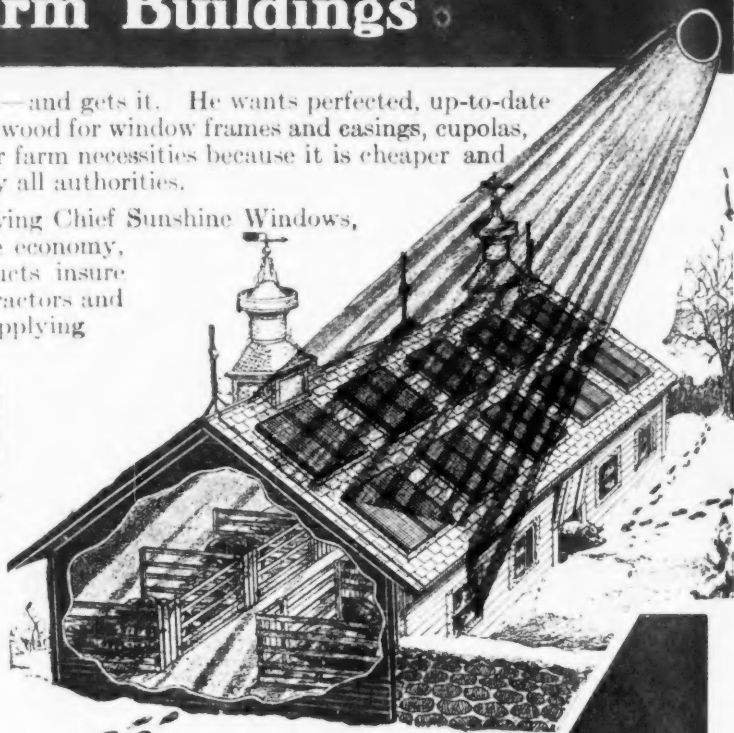
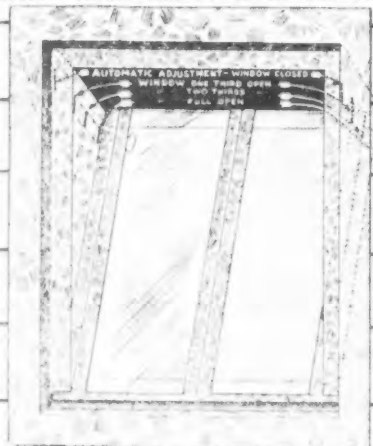
The Chief Window is designed especially for use in stock barns where an abundance of fresh air is an absolute essential. It solves the problem of admitting fresh, out-of-doors air freely without allowing any draft to directly strike the animals inside—the incoming air is deflected upwards and away from them. The window tilts open at the top, like a transom and has adjustments for four positions—one closed and three open. It is held firmly in any of these positions by an easily operated galvanixed latch.

The illustration below shows the window fully opened. Note the relative positions of the aperture through which air is admitted and the cattle in the barn. No possibility of a direct draft striking them.

Chief Ventilating Sidewall Windows are made—frame and casing—of heavy galvanized steel. Will not rot, rust, swell or shrink. Absolutely fire-proof and leak-proof; need no paint and no repairs. Will last as long as the building. Casing and frame are separate pieces—frame can be taken out entirely to admit more air in summer.

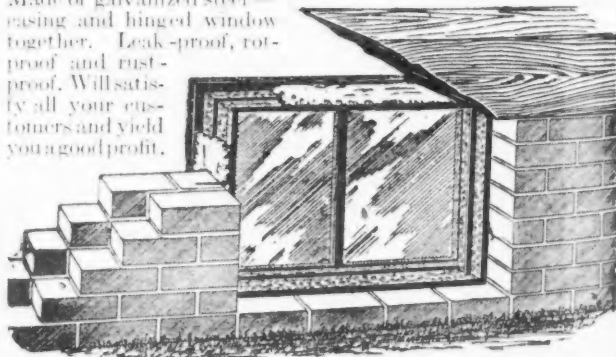
Glass slides in, no putty used.

These windows fit into any building—old or new. Easily installed anywhere.



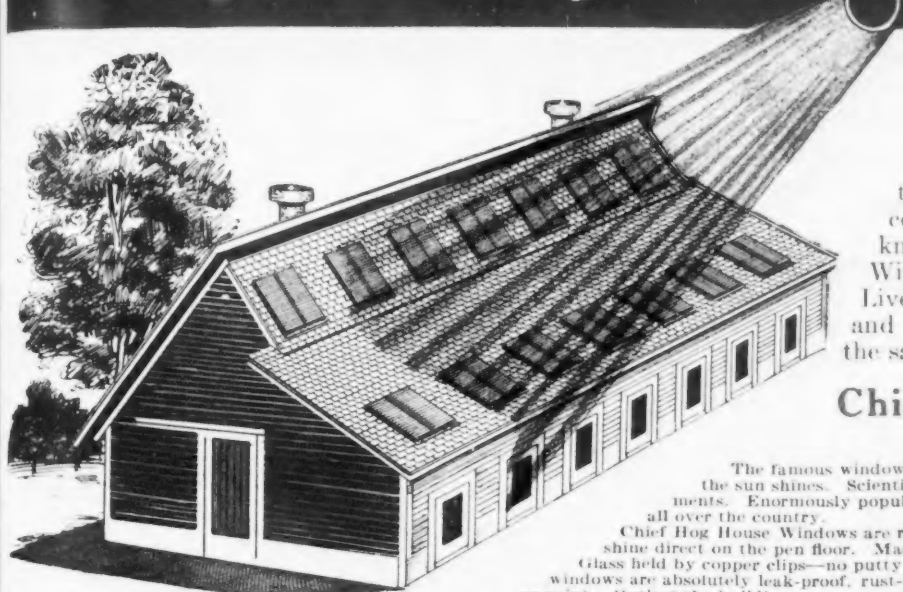
Chief Cellar Windows

A modern, easily installed, durable and absolutely satisfactory cellar window. Solves that problem for your lifetime. Last three times as long as wooden cellar windows and are ten times as convenient in service. Will not swell and stick or shrink and leave cracks. Always open and close easily. Made of galvanized steel—casing and hinged window together. Leak-proof, rot-proof and rust-proof. Will satisfy all your customers and yield you a good profit.



SHRAUGER ATLANTIC

Best Carpenters Recommend And Use CHIEF SUNSHINE WINDOWS and Cupolas—They Please All Owners



Hundreds of carpenters are making quick and easy profits, increasing their business and satisfying *all* their customers with Chief Sunshine Windows. Farmers look to their local builders for the best and most modern features of construction in all farm buildings. They know the advantage of the perfected Chief Windows and are buying them everywhere. Live carpenters are recommending them and pocketing profits daily. You can do the same.

Chief Sunshine Hog House Windows

The famous windows that insure sunshine for the hogs every day that the sun shines. Scientifically designed and constructed to meet all requirements. Enormously popular with the live, progressive farmers and stock men all over the country.

Chief Hog House Windows are roof windows—set right into the roof and admit sunshine direct on the pen floor. Made of heavy galvanized steel—frame, sash and all. Glass held by copper clips—no putty used—and protected by heavy wire mesh. These windows are absolutely leak-proof, rust-proof, rot-proof and fire-proof. Never need repairs or paint. Outlast the building.

EASY TO INSTALL—Chief Windows can be built into new hog houses or set into old ones quickly and easily. Simply remove shingles to admit windows, insert windows and reshingle over flashing. More Profit and less work for you installing Chief Windows than wooden windows.

Chief Sidewall Windows

A sidewall window—sash and casing combined—built of strong, enduring, galvanized steel and suitable for *any* farm building. Most practical and satisfactory window you can put in. Absolutely leak-proof, rot-proof and rust-proof. Neat, durable and convenient. Doesn't shrink or swell, always works easily. Can be set in so window slides up, down or sideways as desired. Glass easily replaced, if broken—no putty needed. Easy to install in any building, old or new. Cost about the same as wooden windows—last twice as long.



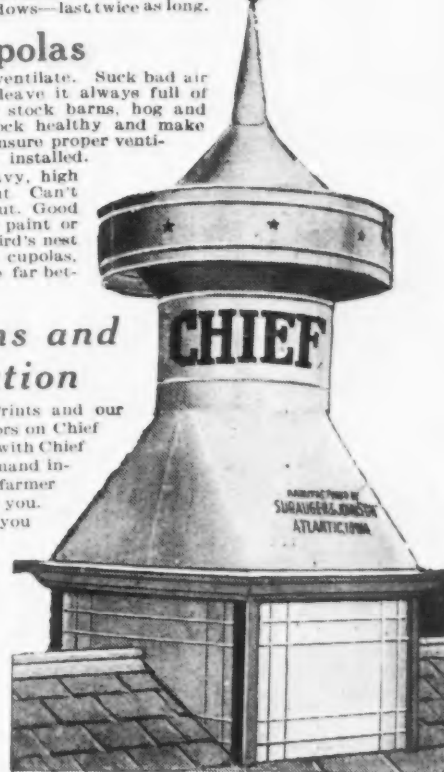
Chief Cupolas

Ventilating Cupolas that *really* ventilate. Suck bad air right out of any building and leave it always full of fresh, pure air. Invaluable for stock barns, hog and poultry houses, etc. Keep stock healthy and make money for owners. Absolutely insure proper ventilation for any building where installed.

Chief Cupolas are made of heavy, high grade galvanized steel throughout. Can't rot, won't rust and won't wear out. Good for a lifetime of service without paint or repairs. Cannot leak and are bird's nest proof. Cost less than wooden cupolas, look better, last longer, ventilate far better and are easier to install.

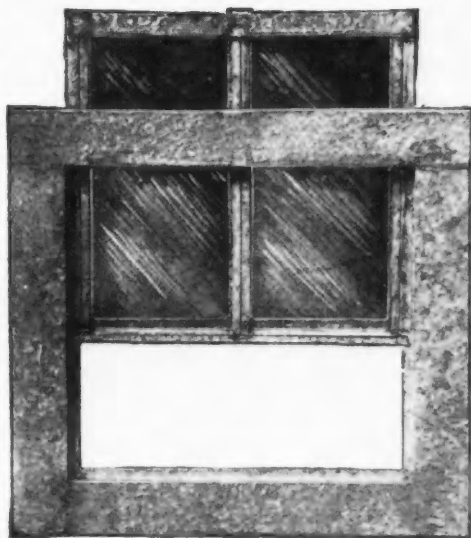
Write for Plans and Full Information

Write for the 4 Free Blue Prints and our literature and prices to contractors on Chief Products. You can make money with Chief Windows and Cupolas—the demand increases all the time and every farmer who buys becomes a booster for you. We'll help you sell and make you a mighty profitable offer. Write us today.



BLUE PRINTS of Modern Hog House Free to Carpenters and Builders

Let us send you our set of four complete plans and details of construction of modern hog houses. Plans are free and complete in every detail—embody all latest and best ideas. Valuable business-letters for you—farmers want the new features of modern construction. Ask for plans when you write.



& JOHNSON

IOWA, U. S. A.

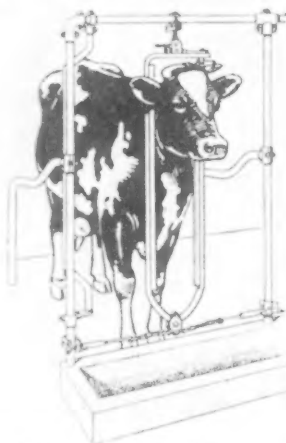
by a swivel hanger. When the door is opened it folds outward and back against the building so that it is entirely out of the way. The track is curved outward near the end to make this possible.

This new garage door hanger is made by the Safety Door Hanger Co., Ashland, Ohio. Further information can be secured from them.



Special Features of Libbey Barn Equipment

Barn equipment and tools gain favor with farmers in proportion to the value and service that they give. Special features that add to the usefulness of barn equipment are often the deciding factor in buying such material.



Libbey Cushioned Stanchion for Cow Comfort.

The equipment shown here has several distinctive advantages that have often proved the deciding point in determining the type of barn fixtures that are to be used. The principle style of Libbey steel stall, as shown here, is fitted with cushion fastening for the stanchion. Covered springs are incorporated in the lower chain fastening of the stanchion to form this cushion. Many progressive dairymen have stated that this is one of the best features to have in a stanchion for high-grade dairy cows. The spring prevents any strain on the neck or shoulders of the cow in lying down or getting up.

The equipment shown here has several distinctive advantages that have often proved the deciding point in determining the type of barn fixtures that are to be used. The principle style of Libbey steel stall, as shown here, is fitted with cushion fastening for the stanchion. Covered springs are incorporated in the lower chain fastening of the stanchion to form this cushion. Many progressive dairymen have stated that this is one of the best features to have in a stanchion for high-grade dairy cows. The spring prevents any strain on the neck or shoulders of the cow in lying down or getting up.

The automatic water bowl also has several advantages that recommend it to the farmer and dairyman, because it presents a sanitary and labor-saving way of watering animals of all kinds. Each bowl is automatic in itself as it controls its own water supply and does not have to depend on a general float tank. The swing lever in each bowl operates the water valve. The animal opens the valve by pushing this lever and secures water as long as it is drinking. When the cow or horse finishes, the lever swings back in place and shuts off the water supply.



Libbey Automatic Water Bowl.

It allows each animal to get water at any time of the day or night.

Other special time and labor-saving features of this type of equipment can be obtained from the C. A. Libbey Company, Oakkosh, Wis. A card addressed to them will bring full particulars.



Installing Barn Equipment

Not even the very best class of dairy barn equipment can give proper satisfaction unless it is properly installed. Just because a man has built barns and houses it doesn't necessarily follow that he knows how to put in barn equipment, so it will give the best kind of service.

The catalog of the makers of the equipment used in the palatial Jennings stock barns contains complete instructions concerning the method of installing all their

(Continued to page 132.)



Miles and Miles of WILLIS VENTILATORS

have been put up in the last twenty-four years. Such a record is the best guarantee for service and satisfaction.

And yet we ask you to judge the Willis solely upon its merits. It is constructed to suck out all impure foul air, gases, smoke, steam or odors from all types of farm buildings where fresh air is essential. Made of only the highest quality of sheet metal by skilled and honest workmen. And made in large quantities—giving you the benefit of the lowest possible prices.

We want every barn builder to know the Willis Ventilator and why he can't afford to install any other.

Write for our large catalog for further details.

Dept. "B" WILLIS MFG. CO., Galesburg, Ill.

WAGNER

Barn Door Hangers and Tracks

Are Famed for Their Easy Operation, Long Life and Freedom from Trouble

WAGNER Door Hangers—made in many styles and sizes—are of the easy-rolling, non-sticking, long-lasting type. They're recommended and used by good builders because they know that WAGNER door equipments are *right*. Study these few points of WAGNER superiority:

WAGNER
EVER-TIGHT
TROLLEY
TRACK
No. 100
(About
One-half
Actual Size)

The Ever-Tight is one of the newest and most popular WAGNER Tracks. Its special advantage is that no brackets are required and the track fits up extra snug and tight so that it is impossible for rain to drive in between track and building. Outer section extends out over top of door affording complete protection to hanger and door. All WAGNER Leader Hangers fit the Ever-Tight track.

WRITE FOR SPECIAL FOLDER showing newest and best types of Hangers and Tracks for every purpose.

Solid Malleable Hanger Bar—(A) extending beyond wheels, protects wheels by preventing them from striking against end of track. A small detail, perhaps—but very valuable.

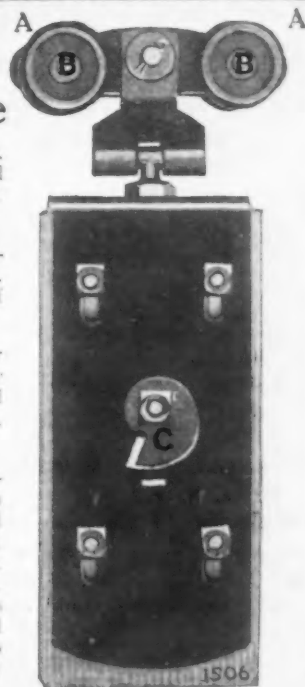
Roller-Bearing Wheels—(B) insure smooth and easy operation of the door and long life to the hangers. The door that is WAGNER equipped gives *lasting* satisfaction. The trolley wheels being arranged tandem, cannot oscillate, therefore run smoothly and quietly.

Cam Vertical Adjustment—(C) The Cam Adjustment used on WAGNER Door Hangers is the simplest, easiest to adjust and most practical vertical adjustment device ever designed. This method requires no notching or cutting of door. It is devoid of numerous parts, such as nuts, bolts, etc. To adjust, all that is necessary is to loosen the nuts of the strap, take wrench and turn cam until the desired adjustment is obtained; tighten the nuts, and the job is done. The edge of the cam bears against the offset of the strap, and it is impossible for anything to shift. Tightening the nuts of the bolts guarantees against any shift whatever.

Self-Cleaning, Bird-Proof Track All WAGNER trolley door tracks, owing to their special design, are absolutely bird-proof and self-cleaning. Should any dust or small particles blow into track, action of trolley wheels forces it out through groove at bottom. And besides—WAGNER tracks are made of 25% thicker metal than most makes. WAGNER equipped doors can't sag, come off track or cause any trouble.

Removable End Cap A great convenience. Hanger can be attached to door, run in the end of the track and end cap fitted, all after track is up. Simplifies the work of hanging the door. Our new Universal End-Cap is interchangeable in all the WAGNER trolley tracks.

Many Styles for Every Need The hanger illustrated is but one of the WAGNER line. We make light and heavy hangers, single and double strap, long or short pendant, for barns, garages, warehouses, fire-doors, etc.



WAGNER STUDDING SOCKETS

for Fastening Studding to Cement Floors



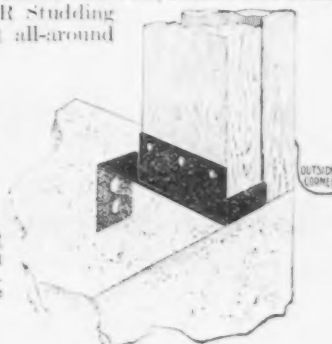
The rapidly increasing use of cement for garages, barns, cornerbills, stables and other buildings has created a big demand for WAGNER Studding Sockets—the easiest-to-use, most durable and best all-around way of anchoring studding in cement floors.

Set into the cement while fresh, they are tightly secured and hold with a grip of steel. Protect ends of studding against decay and insure long life to the building.

Made in three sizes—for 2x4, 2x6, 2x8, 4x4 or 6x6 studding; also light weight for partitions.

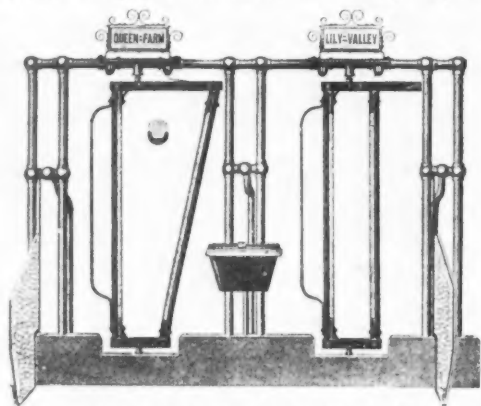
YOUR DEALER CAN SUPPLY YOU. Ask your dealer to show you WAGNER Studding Sockets; also the line of WAGNER Door Hangers and Tracks. Our special new Rain-Shed, Ever-Tight and Ezy-Fit Trolley Tracks will especially interest you. We issue a special folder on Tracks and Hangers and one on Studding Sockets. Write for them.

WAGNER MFG. CO., Cedar Falls, Iowa



types of equipment. These instructions enable the contractor to put in equipment and be sure that it will give satisfaction. They also eliminate all guesswork and thus save time and money for the man who is doing the work.

The accompanying interior photo and also the exterior shown on page 62, are views of the C. H. Jennings Stock barn at Towanda, Pa. This barn is completely furnished



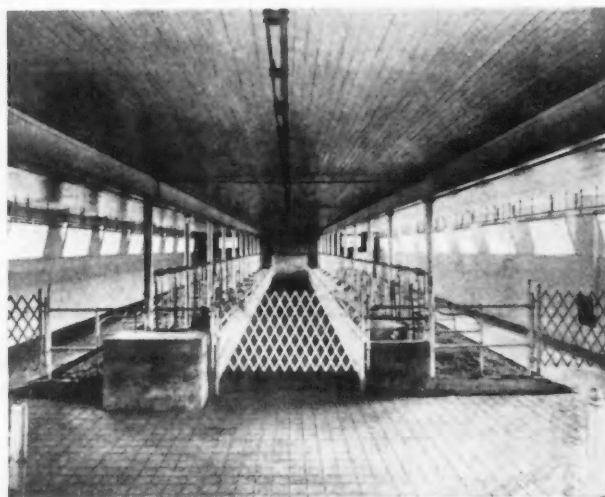
Cow Stanchion Opened and Closed.

with the equipment made by Glor Bros. & Willis Manufacturing Company, Attica, N. Y. Mr. Jennings sent the following letter to this concern after the equipment had been in some time:

Towanda, Pa., March 14, 1914.

Messrs. Glor Bros. & Willis Manufacturing Co.,
Attica, N. Y.

Gentlemen: I am using the different devices of your manufacture for our cow barn, which were installed last year. They are giving us the most complete satisfaction in every respect. I could not even suggest a single im-



Collapsing Gates for Stable Alleys in C. H. Jennings' Barn.

provement of any sort of device or devices that would be of any advantage over those which you have furnished me.

Very truly yours, C. H. JENNINGS.

The instructions contained in their catalog make it possible for all contractors to make installations that will be just as satisfactory as this one has been. They have an agency proposition for carpenters and builders that also presents many advantages. Copies of their catalog and the details of their proposition can be obtained from them.

Their line includes all kinds of barn equipment for all kinds of barns. The collapsing gate shown in the alleys has many good features as it is very easily opened and closed and is never in the way. The small illustration shows one of their stanchions, of which they have several types.

Gale Ventilators

For Barns, Chicken Houses, Creameries, or any other buildings that need perfect ventilation.

We guarantee satisfaction. Specify the Gale on all your buildings, and you will have no complaints from your customers.

Write for our Catalog



Made of the best material on scientific principles, the Gale pays for itself in a short time by preserving property.

Your customer wants the best ventilator for his money. Suggest the Gale and he'll get it.

Galesburg Sheet Metal Works
Galesburg, Illinois



Service That Wins

When you figure on a barn-building contract, the prospective builder is influenced by many considerations other than the mere amount of your bid.

He wants you to help him work out the most convenient arrangement for his barn. He wants suggestions in regard to grading and putting in the cement work. He wants advice in regard to the kind of equipment to install. He wants a framing construction that will be solid but economical. He wants you to recommend a system of ventilation, and he wants to know why you recommend it.

In other words, he wants COMPLETE SERVICE, and the carpenter or contractor who can render such service is pretty apt to land the contract.

"Louden Barn Plans" will enable you to render just that kind of service.

Read the following brief description of the book, then clip the coupon and mail it today.

"LOUDEN BARN PLANS"

is not a catalog of barn equipment. Its mission is to spread the gospel of better barns; not *expensive* barns, but BETTER BARNs. It contains the best of the building ideas the Loudon Company has gathered during 49 years of barn building and barn equipping experience.

"Louden Barn Plans" show 51 representative designs for cow barns, horse barns, combination barns, hog houses and other farm buildings, **with full description and estimated cost of each.**

Its 194 drawings, plans and photographs illustrate practically every phase of modern barn construction. It treats in a helpful, understandable way the subjects of grading, drainage, concrete work, strength of materials, framing, lighting, ventilating and various other important problems that confront every barn builder.

Sooner or later you'll wish you had a copy of "Louden Barn Plans!" Don't wait till you're ready to use it; get it now! Tear off the coupon or mail us a postal.

There's no obligation—we're glad to send you the book; and you'll be glad to have it.

The Loudon Machinery Company

5501 Court Street
FAIRFIELD, IOWA

The
Louden
Machinery
Company
5501 Court St.
Fairfield, Iowa

Please send me, free and
prepaid,

- ☐ LOUDEN BARN PLANS
☐ Your Catalog of Barn Equipment

Name

City

State

THIS COUPON IS FOR YOUR CONVENIENCE
MAIL IT TODAY!

Zinc Coated Nails for Permanent Roofs

The great enemy of iron and steel is rust, and as both are extremely necessary in buildings of all kinds, various methods are developed for preventing the rust action. Take shingle roofs for example. The wooden shingle will last a long time if the nail holding it on does not go to pieces. It seems peculiar that a soft material like wood should outwear a hard one like iron, but such is the case under the wear and tear that a roof is subjected to.

Zinc is the metal that is most often used to protect the iron or steel from the corrosion of the elements. It is used in galvanized sheets and in galvanized metal lath and other products that are used in building. Zinc coated nails are also used for keeping

shingles in place because they will not rust and will therefore last as long as the shingles.

The sample package shown here



Send for this Free Sample and Test them Yourself.

will be sent to any of our readers that are interested and want to try out the "Zinclud" nail and see how it works on the job. There are three compartments in the little wooden box—one for each of three sizes of nails. The nails are made in both cut and wire style. The sizes sent are 3d, 3½d, and 4d.

The "Zinclud" nail is a product of the W. H. Maze Company, Peru, Illinois. They formerly made a solid zinc nail

also but, since the war has boosted the price of zinc, they are making only the zinc coated nail. A sample can be secured by writing them, mentioning the AMERICAN CARPENTER AND BUILDER.



Metallic Battens Keep Out the Rain, Snow and Wind

Good cattle or stock must be protected from drafts, such as are likely to be present unless precautions are taken to prevent them. In case vertical siding is used, the accompanying illustration shows a metallic batten that presents one



Rib in Metal Bottom Takes Care of Expansion and Contraction.

of the best methods of preventing a draft.

These strips are made in 6, 8 and 10-foot lengths and are easily cut to fit any particular place. There is no waste, as the short ends can be used anywhere. They are made of heavily galvanized sheets, which insure their lasting qualities.

The rib on the batten fits between the siding, so that warping and contraction do not affect it, as it can expand without pulling loose from the siding. The makers say that it will fit tight to any warped siding and as it lies flat it will not interfere with sliding doors.

This particular strip is a product of the Metallic Batten Company, Owensville, Ind. They will send a sample of this strip to any of our readers that desire it, together with complete details and descriptions.

Monitor

Used wherever barns are built. They profit the contractor who puts them up, and the farmer who tests them out.

Installed in five minutes. They will last for years, a permanent testimonial to your building ability.

And they furnish the most efficient ventilation. The farmer could ask for no better service.

His satisfaction is your gain. Sell him a Monitor, and you will sell one to his neighbor.

Cupolas

Built to Ventilate

the Monitor ventilates, supplying the proper amount of fresh air at all times and under all weather conditions.

Proof against wind, weather and birds. Made of the best grade of galvanized steel, the Monitor will not rust, crack, or dry out.

It will circulate more air than a wooden cupola twice its size, and looks twice as good.

Always on the job with the best kind of service, the Monitor will cost the owner less every day it is in use.

Write for our special discount to Contractors and Builders. Get acquainted with the Cupola that will make the most money for you.

B.F. Lichty & Sons Co.

Waterloo, Iowa.

The *Meadows* Elevator Pays For Itself



A Meadows Elevator will pay for itself in less than two years' time. The farmer can save forty dollars a year on his corn crop alone, and it is not necessary to dig a pit or build a cupola to install it.

The Meadows Inside Stationary Cup Elevator angles off and follows the rafters, thus allowing full capacity of the building.

Just so in every detail of the construction, we have embodied only those ideas which years of experience have proven to be meritorious. The MEADOWS trade mark is a positive assurance of best material and skilled workmanship.

The time has come when every crib or barn means an elevator; and to every contractor an elevator should mean a "MEADOWS".

Because he wants the most profitable elevator, considering everything, both for the farmer and himself.

It's good business to know our elevators. Write for our catalogs.

The Meadows Manufacturing Co. - Pontiac, Ill.

**Meadows
Mfg. Co.
Pontiac, Ill.**

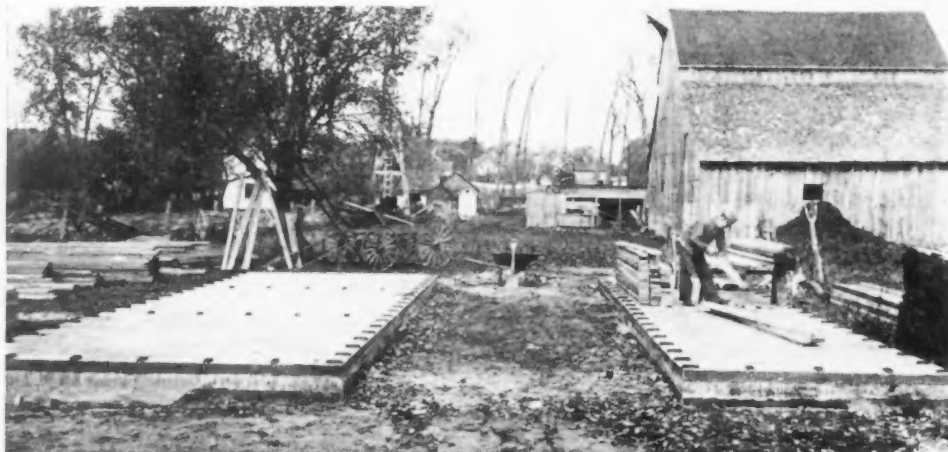
Kindly send me your
catalogs of practical in-
formation on elevators.

Ross Studding Sockets in a Large Corncrib

The accompanying photograph is interesting as showing the cement floors in a 40 ft. combined cornerib and granary built last fall by Mr. Archie Armstrong on his farm near Chester, Iowa.

The crib on the right is for corn, while the one on the

are set in place when the concrete is surfaced, and the embedded lugs hold them firmly in position. The studding go right down into these sockets, and are solid and perfectly supported without any need for wooden sills which would soon rot, or the old, bothersome toenailing that soon rusts away.



Cement Floors on Farm of Archie Armstrong, near Chester, Iowa.

left is divided into three bins, for corn, oats, wheat, or other small grain.

Every builder knows how hard it has been to connect wood studding, posts or other upright framing members strongly and securely onto concrete floors or foundations. Ross Studding Sockets will "do the trick." They are made in sizes to fit any upright, and are adapted to all positions, as at corners, along side or end walls, partitions, etc. They

there is a fine opportunity for them to install various barn fixtures at a nice profit to themselves. There are many of these fixtures that can be handled as an agency proposition with the resulting advantage to the builder.

The barn on page 138 was built by one of our subscribers, Mr. M. Lepley, Bertrand, Mo., and is equipped with "Monitor" cupolas for which he has the agency. He states that they

(Continued to page 138.)

Ross Studding Sockets are made by G. M. Ross & Co., 1224 Broad St., Grinnell, Iowa. They have recently published an interesting catalog containing more complete information about these durable post supports, as well as very helpful suggestions for construction of concrete floors and foundations. Contractors and builders value this catalog very highly. It will be mailed free upon request.



Monitor Cupolas

Many of our readers build all kinds of barns and farm buildings during the year and

HARRIS BARN EQUIPMENT





**HARRIS
STANCHION**

The most practical and the most profitable equipment ever made for a barn. A big statement, but guaranteed by hundreds of successful barn builders and practical dairymen. And easy to install and popular with the farmer, Harris equipment means more jobs for the contractor with more profit on each job. Our Adjustable Frame Cow Stall, in particular, is installed in a few minutes. It comes fitted together, with no small bolts or complicated parts to be set in cement. The farmer can adjust its length in one minute with the cow in the stanchion, placing the cow exactly where desired without taking the stall apart and rebuilding it again. There is no rust or corrosion of bolts or other parts. The stall will outlast the barn itself.

We want one enterprising contractor in every community to handle our line exclusively. Write immediately for our proposition and our catalogs.

HARRIS MANUFACTURING COMPANY, Salem, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

"PREPAREDNESS"

PROTECTION
AGAINST
LIGHTNING

STAR SECTION GALVANIZED IRON LIGHTNING RODS *Are 100% Efficient* 63 years of Successful Experience

OUR RODS have stood a test of time that no other rods can boast. They are unequaled for practical application, durability, appearance and safety. Every country building you build should be equipped with them. They are as necessary to the country building as is the fire department to the city. It is YOUR work to install them.

U. S. Government's Bureau of Standards Says—

"The effectiveness of Lightning rods indicates . . . they reduce the fire hazard from lightning by 80 to 90% in the case of houses and by as much as 99% in the case of barns. It therefore seems that for the most advantageous system of protection against lightning, the choice of rods lies between the IRON rod as usually sold, or STAR SECTION form and tightly twisted copper cable. MOST OF THE ADVANTAGES CLAIMED FOR UNUSUAL FORMS OF CABLES BEING PRACTICALLY NONEXISTENT."

If You are a Builder, Here is Your Opportunity

According to government statistics of buildings liable to lightning loss, 80% are unprotected. These are waiting for you. Your word (as a builder) carries weight in your community. YOU ARE OUR LOGICAL REPRESENTATIVE. We want you with us in a profitable and honorable business. Write us today.

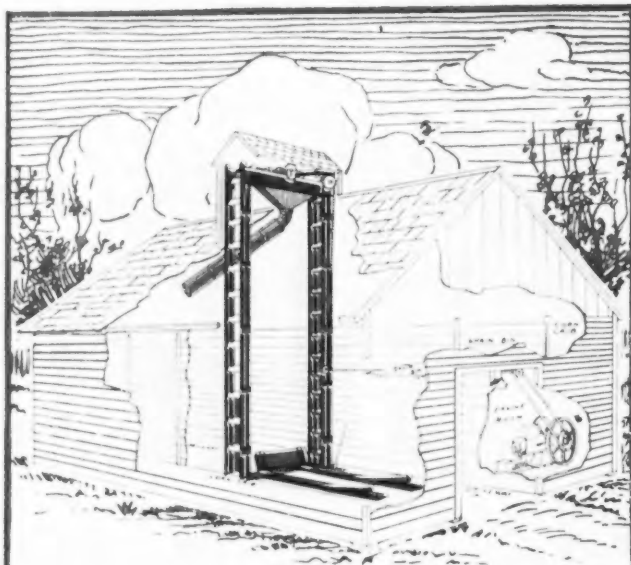
REYBURN, HUNTER & CO.

412-432 No. Sangamon St.

CHICAGO, ILL.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



MEYER

CUP ELEVATORS

YOUR customers choice of an Elevator, based solely on quality; efficiency and manner of construction, together with real satisfaction and service, regardless of price would naturally be a "Meyer."

No. 1 shown in a crib is the best. Handiest, Simplest and Easiest running Elevator made. It will elevate wheat, corn or oats, 50 bu., any height, in 3 to 5 min.

We use H4 special riveted chain. No. 16 g. steel buckets, cold rolled steel for drive shaft, etc.

We also make the **One Side Elevators**.

The demand for "Meyer" Elevators should influence you to be protected in your territory. Prove to your trade how they can pay for the Elevator by savings of time and labor; then add these savings to their bank account. Write for **free crib plans** and catalog **today**.

Mr. J. C. Schrock, Milford, Neb., Contractor and Builder writes: "I have been representing the A. F. Meyer Mfg. Co., for a number of years. My customers were much interested and pleased with the way it handled ear corn and small grain. I never made a deal with a firm at home or any other place that used me any fairer."

A. F. MEYER MFG. CO.

Dept. 301

MORTON, ILLINOIS



Contractor Lepley of Bertrand, Mo., is Agent for "Monitor" Ventilators.

add considerably to the looks of the barns and also give very good satisfaction.

The makers of this cupola have an attractive agency offer for builders to handle their line. They make cupolas in all sizes and prices so that the builder can always fit one to the particular needs of his customers. The "Monitor" cupola is made by B. F. Lichty & Sons Co., Sta. A, Waterloo, Iowa.

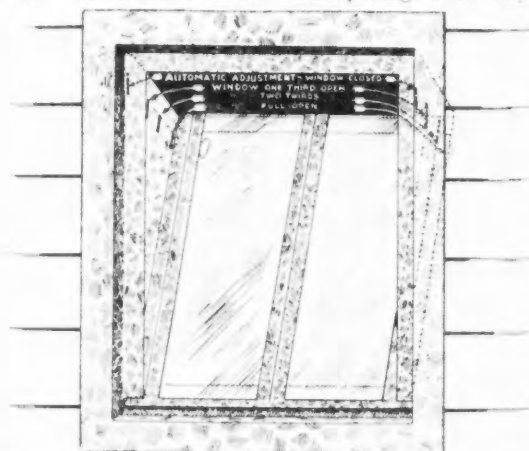
This concern will be glad to describe their agency proposition to any of our readers on request.

After a continued service of almost fifteen years as sales manager, R. J. Kichline of Shattington, Pa., on Dec. 24 severed his connection with J. K. Hower, a shipper of slate products and is now in the business for himself.

The Shrauger and Johnson Line

In ventilating a barn in cool weather it is often desirable to get a little more air than is furnished by the ventilating system, and in many smaller barns the ventilation is taken care of entirely by the windows and the window shown here is particularly suited for either of these conditions.

It is made with a galvanized frame and sash so that it will not be affected by moisture. The sash in the frame is placed so that it can be opened in one of two ways. It can either be removed so that the opening is entirely clear

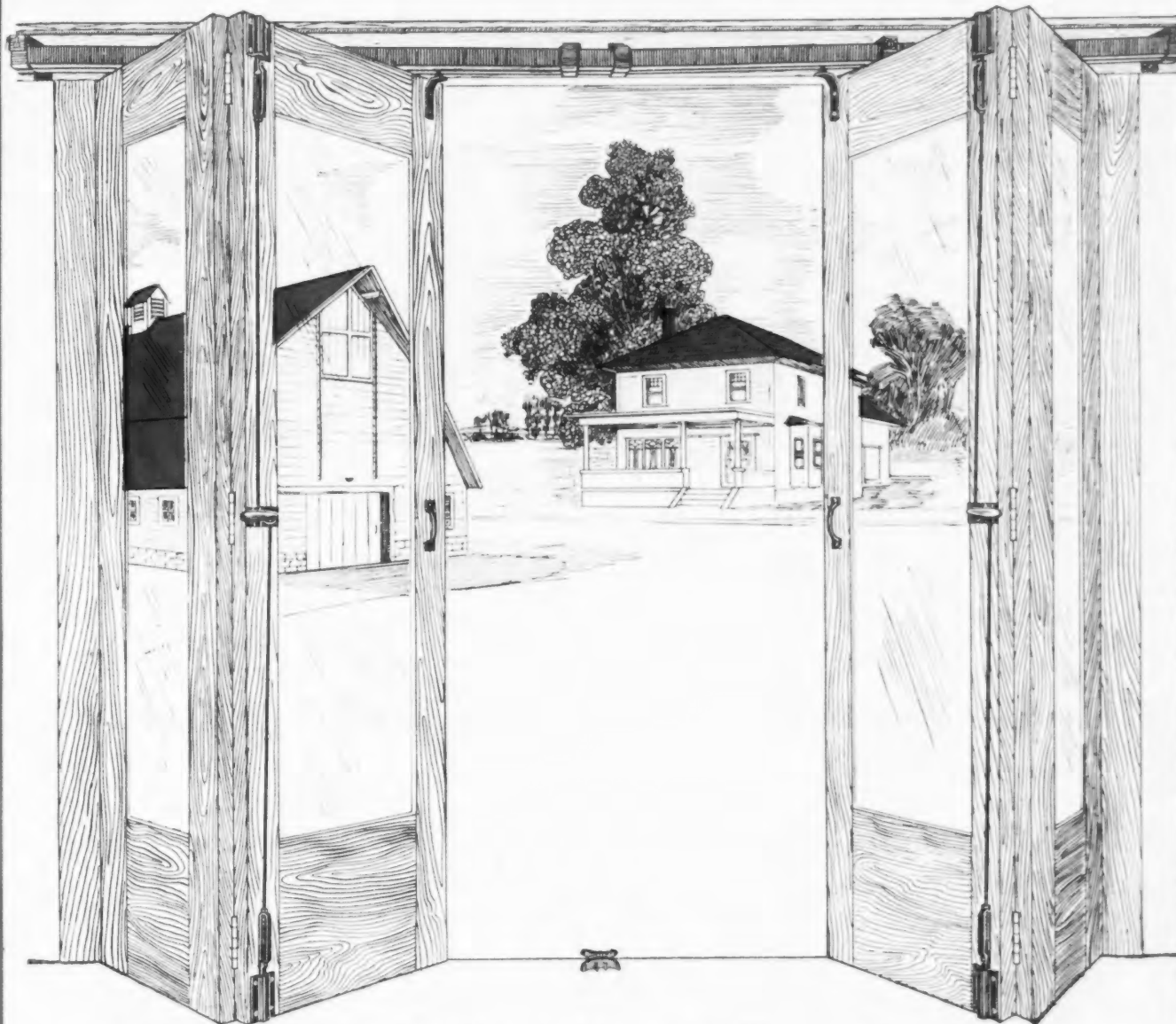


Shrauger and Johnson's New Ventilating Barn Window. Outside View.

or it can be pivoted about the bottom and opened to various degrees to suit the weather conditions. A sheet metal frame is built back from the casing and is arranged so that the window can be fastened open at varying angles. As the sash opens in this way it protects the animals from

(Continued on page 140.)

R-W GARAGE DOOR HARDWARE



R-W Sliding, Folding Garage Door Equipment

Popular with garage owners throughout the country. Meets the demand for a fixture that will allow hinge doors to fold and slide inside of building requiring only minimum space.

Conditions can be met by hanging 3, 4, 5 or 6 doors in opening, according to width of opening owners desire, etc. : : : : Blue prints and full information on request.

**"A Hanger
for
Any Door
that
Slides"**

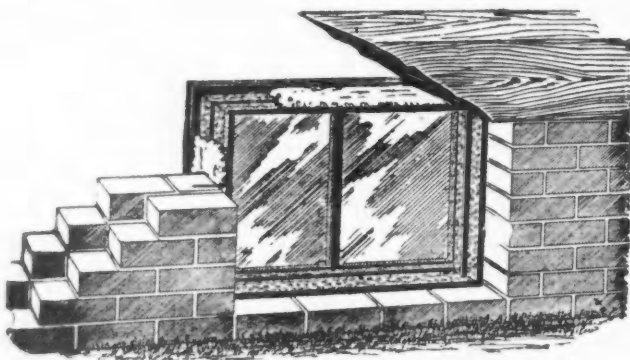
Richards-Wilcox



**MANUFACTURING CO.
AURORA, ILL. U.S.A.**



Can be
Operated by
Electricity for
Public Garage



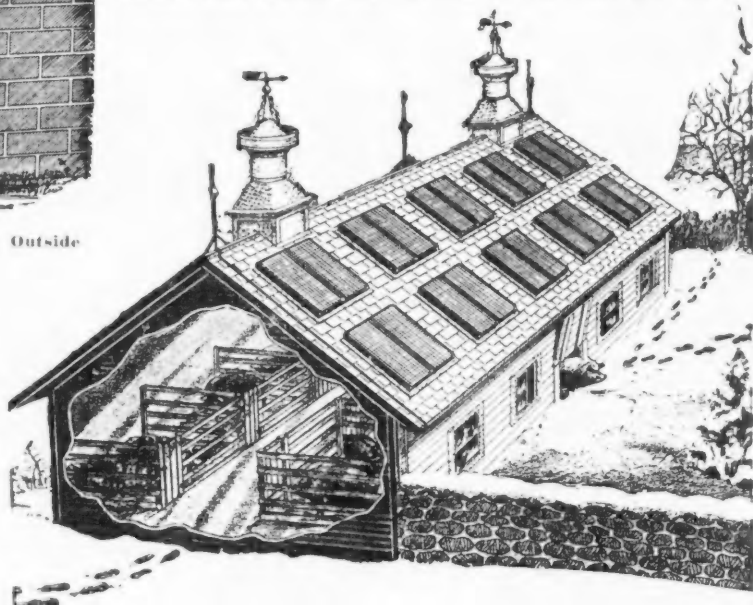
Schrauger and Johnson's Cellar Window with Frame, Outside View.

the direct draft by deflecting the air upward. This method provides a very good ventilating system for barns of all kinds whether large or small. The opening can be made entirely clear, as mentioned before, by removing the sash. This arrangement will often be desirable in hot weather.

Another product is the "Chief" galvanized metal frame and sash which is equipped with a sliding sash. This can be placed so that the sash will slide to either the right or left side or to the top. It makes a handy and convenient window which will not stick and being made of galvanized metal it will not swell or warp. In either of these windows, new panes of glass can be easily placed in the sash frame by sliding them in from the end.

The Schrauger & Johnson Company also make the "Chief" sunshine window for hog houses. This has to be of special construction because of its position on the roof where the

average window would be sure to leak. The frames of these windows are of heavy galvanized iron and hold two 10 by 28-inch panes with 4-inch flashing all the way round. When installing the window, it is placed over the opening and the shingles are placed over flashing on the sides and the top.



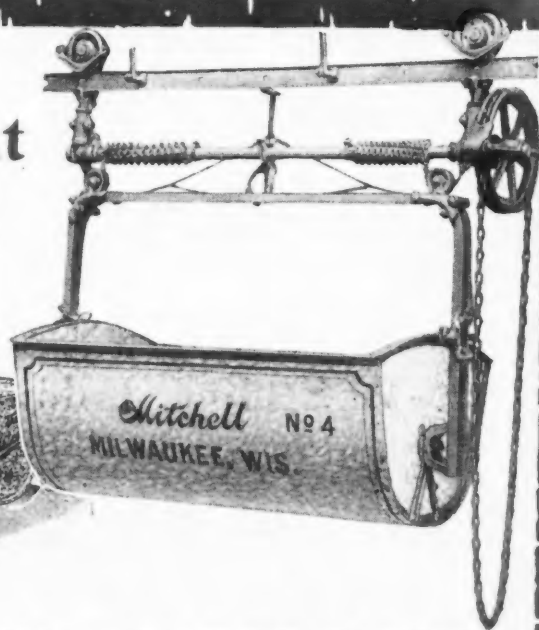
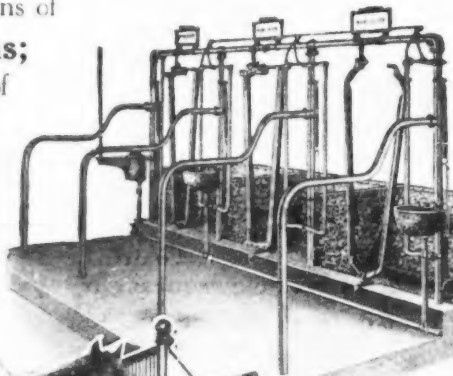
Hog House Equipped with "Chief" Ventilators, "Chief Sunshine" Roof Windows, and "Chief" Side Wall Windows.

Along the bottom the flashing is over the shingles. There is a ridge on the flashing and the shingles come up to this. A trough is thus formed beyond the ridge so that the water is carried off. The glass is held in position by copper clips and no putty is needed. In case a glass is broken, it can easily be

(Continued to page 142.)

Everything for the Barn with the Mitchell Equipment

Four Patterns of
Stanchions;
Five Styles of
Cow and Horse
Stalls;
Thirty Styles
of
Litter, Milk
and
Feed Carriers



SANITARY and LABOR-SAVING

Calf Pens, Cow Pens, Bull Pens, Steel Mangers, Manger Divisions, Tilting Mangers, Water Systems, Ventilating Systems, and Salting Systems.

Mitchell Equipment is guaranteed for one year.

Write today for our catalog.

Mitchell Mfg. Co., MILWAUKEE, WISCONSIN

Here's The New TOPPING Garage Door Hanger

Patent Pending

Here's the most practical, most sensible and most satisfactory door hanger ever designed for garage use—the hanger every auto owner is looking for.

It operates upon an entirely new principle—a principle that

- (1) allows the use of the full door opening without risk or damage to car or door.
- (2) enables the doors to be left wide open without danger of swinging or blowing shut and without needing propping open.
- (3) needs no run-way extending beyond the building on either side.
- (4) allows the doors to be properly weathertight when closed.
- (5) enables the owner, chauffeur, etc., to enter the garage without opening up the whole door.
- (6) allows the door to be easily and quickly opened or closed at all times.
- (7) is so simple that the hanger cannot get out of order, stick and refuse to operate.
- (8) automatically locks open and automatically locks closed.

No other garage door hanger on the market embodies all these advantages.

Topping-hung folding doors can be applied easily and quickly, take up no valuable space **inside** the garage when open, need no projections or guides in the floor—can be opened with ease even by a child.

When the door is open it stays so without any attention on the part of the operator, when closed it **automatically snaps itself tightly shut**. Any size door may be used with this hanger.

The illustrations below show a 16 ft. door made up of four 4 ft. sections.

All Necessary Hardware Furnished Complete With Every Hanger

We are manufacturing the new hanger in complete sets, including all the hardware necessary to put up one door.

The hangers are made to accommodate any size door.

Each set is neatly boxed and includes full instructions for fitting. Write for special trade prices at once.

There's a world of profit in it for you. Send a card tonight.

SAFETY DOOR HANGER CO.

"We make nothing else but Door Hangers"

Ashland, Ohio



**"It's a Dandy,
the Best I've Ever Seen"**



Left—
One Door
Partly Open

Right—
One Door
Open All the
Way, the
Other Partly
Open



replaced by bending up the clips. It is very unlikely that the glass will be broken as it is protected by a heavy galvanized iron screen.

The "Chief" cellar window is also one of their products and is made with a galvanized iron frame and sash so as to be particularly adapted to the basement of houses where the wooden frame is affected more or less by the moisture and by the treatment it receives.

They also make "Chief" cupolas in many different sizes and styles so as to be applicable to all kinds of ventilating problems.

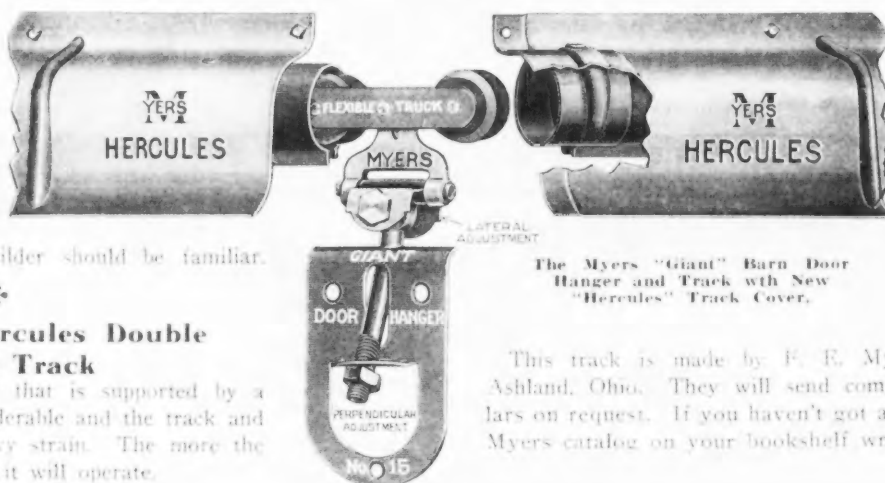
Shrauger & Johnson, 430 Walnut Street, Atlantic, Iowa, are putting on the market a new metal batten strip and also a metal building corner that are attracting attention. The corners are made for both inside and outside corners. Further particulars of these new features can be obtained from the makers.

Prices and descriptions of all their line or of any branch of their line will be furnished to any of our readers on request. They make various other sheet metal specialties for use on the farm with which the builder should be familiar.



The Myers Hercules Double Girder Track

The weight of a door that is supported by a track and rollers is considerable and the track and hangers are under a heavy strain. The more the track is braced the better it will operate.



The Myers "Giant" Barn Door Hanger and Track with New "Hercules" Track Cover.

This track is made by F. E. Myers & Bro., Ashland, Ohio. They will send complete particulars on request. If you haven't got a copy of the Myers catalog on your bookshelf write for it.



Carpenters

Earn \$10 to \$25 daily. You are the men to profit most by introducing the greatest **home necessity** of the century in towns without sewerage—taking the country by storm—\$25 a day if you will hustle.

No home is safe—no town is progressive

that tolerates the danger and nuisance of **unclean, unsightly, unsanitary** garden privies.

Schools, churches, stores, hotels, and all public buildings can do much to make their communities sanitary and attractive by installing the Comfort Indoor Closet.

In **homes** it is a boon for the sick and invalid—a convenience that promotes the health of women and children because it encourages regular habits and prevents exposure in bad weather—keeps the premises free from bad odors, flies and typhoid germs—offers a clean, decent and comfortable safe-guard to the entire family—avoids embarrassments to guests—is recommended by physicians and State Boards of Health—is a **home necessity** that every refined household, lacking sewerage, should install **without delay**. Contents emptied only once a month—just like throwing out coffee grounds. Chemicals in retort kills all germ life. Mail coupon quickly.

Comfort Chemical Closet Co.,
302 Factories Building,
Toledo, Ohio.

Mail me full details about your Comfort Indoor Closet. Also advise if you will appoint me your agent in this territory.

Name _____

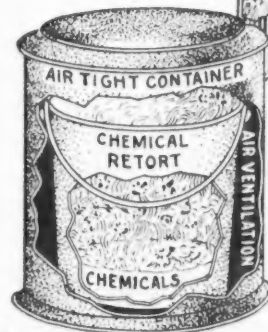
Address _____

COMFORT CHEMICAL CLOSET CO.

302 Factories Building

TOLEDO, OHIO

YOU are home builders—you believe in attractive homes, in healthy homes, in comfortable homes. Therefore you are interested in new improvements which offer greater convenience, comfort and health to your family and your neighbors. Help rid your community of the unsightly, germ-infested outdoor privies. Every home in your town should be equipped with one of these **odorless, sanitary, germ-proof Comfort Indoor Closets.**



A Clean, Straight-Forward Money-Making

Opportunity for Builders, Winter and Summer

We offer to every live builder a chance to make good money on the side, every month in the year, installing our fixtures—it works right in with your regular business.

Get this extra money—increase your weekly income!

RO-SAN

Indoor Closet



ABSOLUTELY ODORLESS

In use the closet is absolutely odorless. A vent pipe provides air circulation. Ro-San Chemical destroys the matter, and renders contents harmless.

This is a modern, beautiful, comfortable, sanitary fixture that you can introduce to your customers at a profit. It eliminates the vile, germ-breeding outdoor privy. This is a chemical closet—efficient and odorless that may be installed right in the house. The old privy breeds disease in summer and is cold and unhealthful in winter. The Ro-San Indoor Closet brings health, comfort and convenience to the home, the office, school, factory. Endorsed by health boards. Recommended by physicians. Easy to install.

RO-SAN

Washstand



It consists of a metal tank concealed behind a French plate mirror and connected by nickel plated brass pipe with a white porcelain bowl of the highest grade. Turn the faucet and you have running water. Light the heater attachment and you have hot water. Fine for Summer Cottages. Used in offices, homes, factories.

Our Proposition to You

We distribute Ro-San fixtures through smart builders. We don't expect our agents to peddle them. We establish you in a dignified, paying business. We assist you in building up that business. Write today for catalog and our agent's proposition—write before some other fellow gets the exclusive agency in your town.

Running Water
Hot or Cold
Without Plumbing

ROWE SANITARY MFG. CO., 180-C Sixth St., DETROIT, MICH.

Read what these Builders have to say:

I haven't been able to put in much time on your proposition, but I enclose seven orders. These will help sell others who are waiting to see how the closets work.—ED. LAMEN, Flora, N. D.

I set my closet up in my office and sold it the next day. Enclosed find six more orders.

S. W. CASSIDY, Herkimer, N. Y.

Enclosed find five orders. One is for a sample for myself. The other four I sold right from your catalog. C. I. BETHLESEN, Clear Lake, Iowa.

Please hurry shipment of closets. I sold two today without doing any talking at all. They sell themselves. C. B. LAHUS, Grand Rapids, Mich.

Every Ro-San Fixture is sold under an Iron-Clad Money-Back Guarantee.

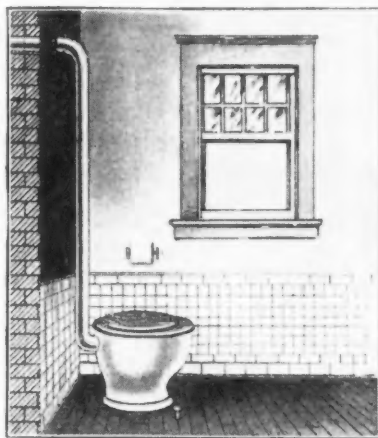
WINTER PROFITS For Carpenters and Builders

Act as our exclusive Agent for

WOLVERINE CHEMICAL CLOSETS

The chemical closet that gives the farmer and villager all the conveniences of his city neighbor at a fraction of the city man's cost.

Sanitary and Efficient Wolverine Chemical Closets fulfill every demand for a safe, clean and odorless method of disposing of sewerage.



No expensive plumbing is necessary and freezing is impossible. The cost of Wolverine Chemical Closet Systems is so low that every family can afford it.

A Big Opportunity for Builders to Make Money this Winter

is to handle and install Wolverine Chemical Closets. They sell themselves and yield a handsome profit. Write for our liberal proposition for Carpenters and Builders.

We also manufacture a Commode Style Closet—and Ventilators for Farm Buildings.

**THE DAIL
STEEL PRODUCTS CO.**
600 Main St. - LANSING, MICH.



Royal Ventilators

Ventilators are in use for a great many purposes besides the ventilation of barns. There are many factories of all kinds, both large and small, that are equipped with ventilators for keeping the air in good condition for the workman.



Royal Ventilating Head Cut Open to Show Construction.

Work under so many different conditions must certainly have many good features.

The makers of this ventilator, Royal Ventilator Company, 417 Locust Street, Philadelphia, Pa., make a most complete line of ventilators for all purposes and consequently are familiar with all kinds of ventilating conditions. They say their ventilators are constructed on scientific principles so that they draw the air upwards and outward from all parts of the building. They make their ventilators of either heavy galvanized steel or of copper as desired. They will be pleased to send a copy of their catalog showing their various types to any of our readers on request.



Cornell Board for Farm Use

That the value of wood fibre wall board on the farm is

a definite quantity is further proven by the fact that the Cornell Wood Products Co. (C. O. Frisbie, President), manufacturers of Cornell-Wood-Board, is putting out new newspaper advertising urging the modernizing of farm homes and other farm buildings thru the use of the product. Mr. Frisbie is using the board thruout his summer home near Buchanan, Mich.

The advantages of Cornell-Wood-Board for the home, summer house, barn, chicken house, etc., as pointed out by the Cornell Company are numerous. The economy of the board, particularly as to transportation and application, is obvious. Information gathered from various parts of the country show that many farmers keep a supply of the material on hand for repairs.

Tests by the Cornell Company have proved conclusively that the material adds greatly to the warmth of a building in winter and insures maximum coolness in the summer. Old dilapidated buildings can be repaired, remodeled and made comfortable and attractive by the application of the board.

Cornell officials say chicken fanciers are among the most enthusiastic boosters of the wood-board. Properly applied it makes the poultry house sanitary, vermin proof and warm. These things mean more eggs from the hens and more money for the farmers.

As a means of showing the wide range of uses and the results obtainable with Cornell-Wood-Board the Cornell Company is offering free plans and specifications drawn up by their own architects, to carpenters, and builders. No obligation whatever is incurred in requesting the plans. All that is asked for by the Cornell Wood Products Company is a rough dimension or sketches of the job. The plans are made complete and furnished absolutely without cost. Address them at 107 Insurance Exchange Building, Chicago.

(Trade Notes Department continued to page 148.)

AHNAPEE VENEER & SEATING CO.

Main Office and Panel Plant: **Algoma, Wisconsin**
Veneer and Saw Mill: **Birchwood, Wisconsin**

ESTABLISHED 1892

We are pioneers in the handling of figured woods and manufacture of panels. Our work from log to finished product is backed by 30 years of actual experience.

The very best native woods are selected for house finish panels. We also make all kinds of bent work, in the white or finished; veneer seats for theatre chairs; shoe store, railway and hall settees; lodge furniture, etc.

SEND SPECIFICATIONS FOR PRICES

The Logical Shingle

Cheap as a wood shingle and twice as good. Will not rot like wood, rust like metal nor crumble like asbestos. Will not catch fire, absorb moisture nor be affected by temperature in any way. Their appearance is always the same—even and artistic. No curling up or splitting, no flying loose, no decaying.

Winthrop Tapered Asphalt Shingles Thick at the Butt, Thin at the Top

May be laid in much less time than is required for wood, because every slate will fit where laid. They stay where they are put until taken up, and always present a smooth, beautiful finish. Made in three colors, with valleys of the same material to match. No especially constructed roofs are necessary—asphalt weighs no more than wood.

Winthrop Tapered Asphalt Shingles are the logical ones for your building. They are economical, beautiful, light, durable and inexpensive. Remember, they are the only **Tapered** Asphalt Shingles.

J. D. Blue, Jr., of the J. D. Blue, Jr., Co., Cedar Rapids, Iowa, writes:

"I am very well pleased with the appearance and water-tightness of my roof. I experienced a little difficulty in getting my contractor to use Winthrop Shingles, he having always handled the wooden shingles, but since the roof is laid he seems equally proud of the job, as I am myself.

"I found the cost practically the same as a dipped shingle, and am satisfied that the wearing quality and appearance are fully 100% better than the best shingled roof. Nothing has brought out more complimentary comments than my asphalt shingled roof."

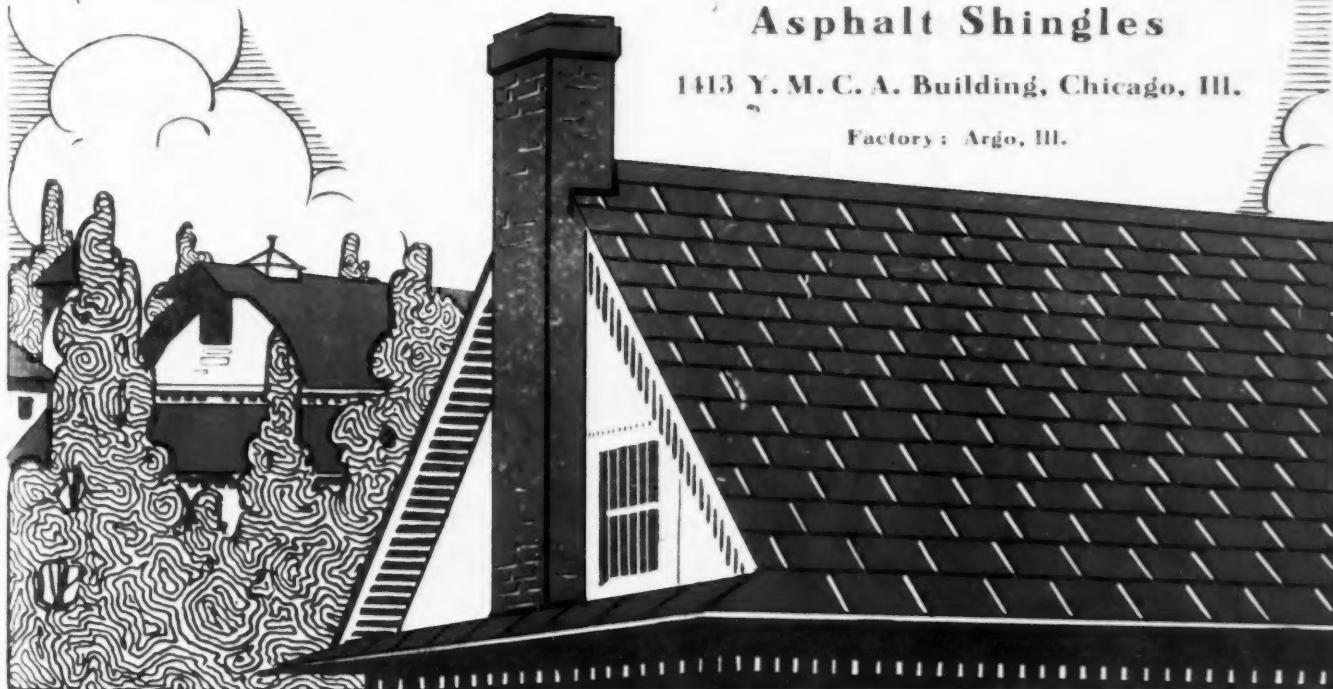
Write for a sample.

The Beckman-Dawson Co.

Asphalt Shingles

1413 Y. M. C. A. Building, Chicago, Ill.

Factory: Argo, Ill.



Make Fire—



Pyrolin

Enables you to combine the advantages of wood with the safety and durability demanded by modern construction.

Too many buildings are lost every year by fire, to permit of inadequate or no protection. A little judgment, and the use of **Pyrolin**, will advance you greatly in the esteem of conservative builders.

And **Pyrolin**, in addition to being fire-resistant, is also the best Pure Linseed Oil Paint and Shingle Stain on the market. Made in any color, and used on any wood. When you have once applied it, your mind will be cleared of all doubts as to its appearance, as well as its protection against fire.

Send for our free book "**Pyrolin Stops Fire.**"

It will explain to you the tests of the U. S. Government; the advantages of **Pyrolin** as a paint, and the money and peace of mind it will save you as a fire-resistant.

Write today for your copy.

Pyrolin Products Company
Ft. Dodge, Iowa

Pyrolin Products

Your Lumber -Resisting-

by using **Pyrolin** Fire-resisting Pure Linseed Oil Paints and Shingle Stains

Expert analytical chemists have found Pyrolin to be absolutely fire-resisting. And it has proven its value in hundreds of dangerous fires.

It is of immense importance to the contractor, as it not only means the protection of his buildings against fire; but it also means the reinstating of wood as the primary building material.—Send in coupon for for an interesting catalog on **Pyrolin**.

**Pyrolin
Products Company**
Ft. Dodge, Iowa

McCloskey Varnish

Western Agents for
McCloskey Varnish Co.
Established 1851

Made only in Philadelphia

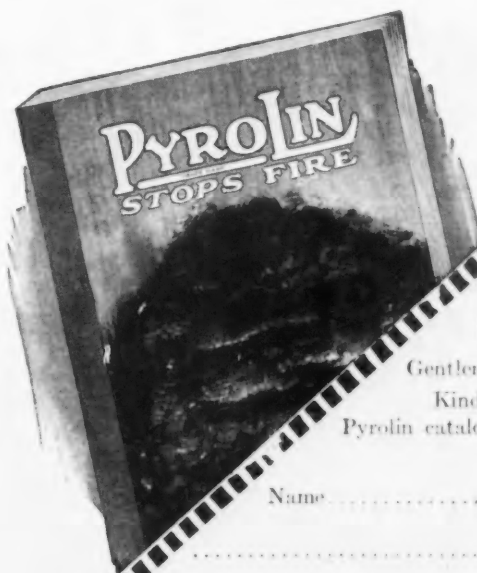
Waterproof Varnishes
for all purposes

**Waterproof Interior
Varnishes** that do not
turn white

**Waterproof Exterior
Varnishes** that hold
the high lustre

Write for information and
catalog

Company



Pyrolin
Products
Company,
Fort Dodge, Ia.

Gentlemen:

Kindly send me your
Pyrolin catalogs.

Name

Address

Preparedness and Protection

The United States Government, thru its Bureau of Standards, has issued a treatise on "Protection of Life and Property Against Lightning," issued on December 15, 1915, by O. S. Peters, Assistance Physicist.

A summary of the book gives such important facts as the following:

The property loss by lightning for the entire country is

approximately \$8,000,000.00 per year, of which by far the greater part occurs in rural districts.

One thousand five hundred persons are affected annually by the lightning stroke in the United States. One-third of these are killed and the rest subject to injuries which in many cases are permanent. Nine-tenths of these accidents are in rural districts.

Lightning rods reduce the fire hazard by 80 to 90 per cent in the case of houses and 99 per cent in the case of barns.

In the event of an equal number of unprotected barns and houses being struck by lightning, four times as many barns as houses would be fired.

From statistics available, it is shown that when a stroke of lightning falls upon an unprotected house sheltering a family of an average number of persons, the chances are about even that one or more of the members will be injured or killed.

The most advantageous system of protection against lightning lies between the iron rod, as usually sold in star section forms, and the tightly twisted copper cables, most of the advantages claimed for unusual forms of cable being practically nonexistent.

Good mechanical construction is quite essential to permanency in a lightning rod system. At the present time it is not as a rule being given the attention it should have.

The resistance of the earth connection should be made as low as possible; in most cases it being impossible to get too low a resistance.

The return on an investment in lightning rods may be expected in two ways—in sense of personal security from lightning and in actual security to both life and property.

Protection against lightning is justified as an investment when real risk to human life is involved and where the property risk is high enough to make protection against lightning cheaper than insurance.

The loss of live stock in fields can be reduced by earthing wire fences at intervals of 100 yards.

No place in which a person may ordinarily retire can be absolutely considered safe from lightning. The place of greatest safety, which is ordinarily accessible, is a well rodded building.

Keyburn, Hunter & Co., 412 N. Sangamon St., Chicago, Ill., would like to get in touch with live contractors who wish to make lightning rods part of their business.



**The Only
Hydraulic
Grain Dump
Made**

**"The
World's
Most
Durable
Elevator"**

Be in a position to give the farmer practical grain elevator advice—get our catalog and all information and be convinced that the

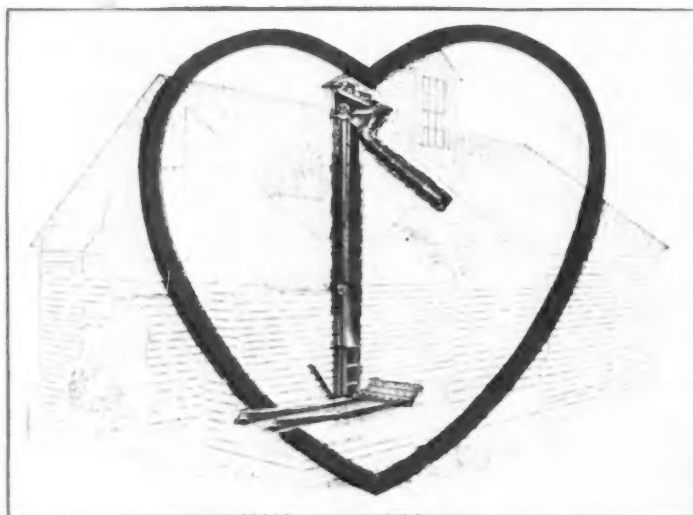
CAMP

is the grain elevating equipment that should be installed in every crib or granary that you build. Let us send you details for your file reference.

Camp Brothers & Company
Washington, Illinois

**"Made
Right
to
Stay
Right"**

Provide for the "HART"



In your barns and cribs, HART BUCKET ELEVATORS are the most economical.

They take up very little space—will not block driveway—ready for use at all times. Operates by gasoline engine or horse power.

FREE PLANS

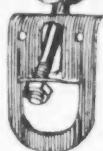
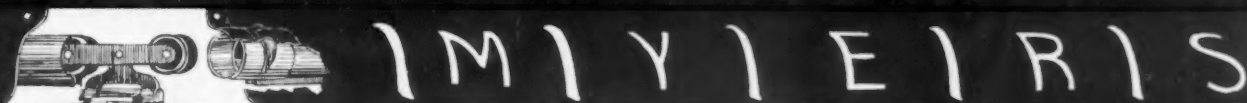
furnished for modern cribs and granaries. Catalog mailed upon request. Write—

Hart Grain Weigher Co.
Peoria Dept. AA. Illinois

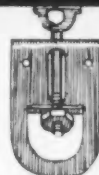
Always specify the "HART"

MYERS PRODUCTS

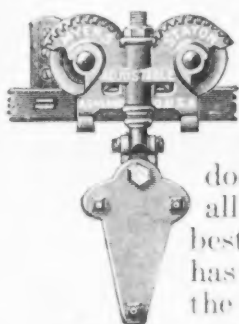
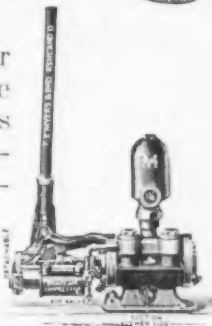
PUMPS — HAYTOOLS — DOORHANGERS



Pumps—All Kinds



Even the country people now think of a Water Supply System as being a necessity. Many are having them installed in their houses and barns at the time of construction. Myers Hydro-Pneumatic Pumps afford an easy means of giving them this, the greatest of conveniences. They are made for hand and power operation with capacities to meet everyone's requirements. We can supply a pump for any purpose.

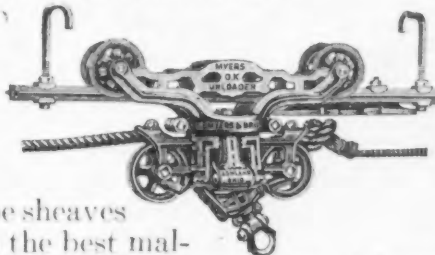


DOOR HANGERS

The easiest way out of door difficulties is to hang all doors with Myers Trouble and Swear Proof Door Hangers. They will roll away all door troubles. In all kinds of weather and under all conditions, it has been found that they are the best hangers to hang to. The new Hercules Track has a covering that protects Track, Hangers and the tops of the doors from the weather.

HAY TOOLS

The purchaser expects much of Myers Hay Unloading Tools and is never disappointed. Myers Unloaders run easily on account of the extra long trucks, large rope sheaves and roller bearings. Made from the best malleable iron that will give long years of satisfactory service. Myers Forks, Slings, Pulleys, etc., have the same high standard of quality. This year promises to be a big building year. Prosperity means many new buildings and improvements for the old. Our catalog will aid you in recommending the best Hay Tools, Pumps and Door Hangers. Write for a copy.

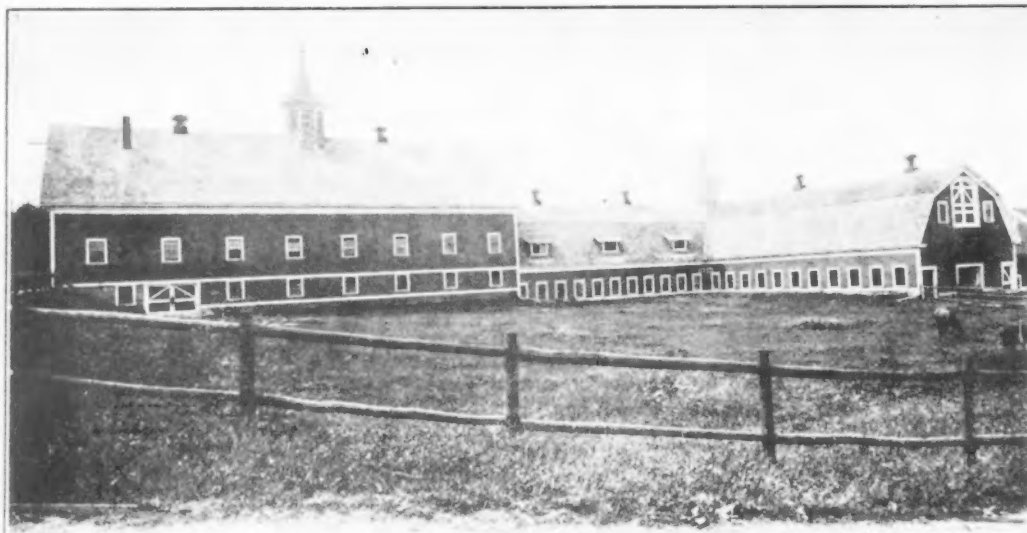


F. E. MYERS & BRO.
ASHLAND, OHIO.

ASHLAND PUMP AND HAY TOOL WORKS

THE
MYERS
WAY
IS THE
EASY
OPER-
ATING
WAY





State of Vermont, at Lyndonville, Vt., Has Twelve 24-inch and One 30-inch "Globe" Ventilators on Their Barns.

"Globes" on Vermont State Barns

The accompanying illustration of two of the barns of the State of Vermont at Lyndonville shows six "Globe" Ventilators out of an installation of thirteen. There are twelve 24 in. and one 30 in. "Globes" used in all. The initial order for two was placed in 1908 and they gave such excellent service that eleven have been installed since then.

This is one of the most widely used ventilators, not only in barns, but on all classes of buildings, where perfect ventilation is desired. They are especially well adapted to use on barns, garages and summer cottages, as well as residences. The new Equitable Building in New York City is

equipped with "Globes" and such successful dairies as Borden, Carnation & Sheffield Milk Company use them in large quantities.

"Globe" Ventilators have been on the market for over 35 years and are simply and strongly constructed of the highest grade galvanized iron. They are furnished all ready to be placed on the building. No frame work is necessary and they are very easy to install.

Full information and miniature working model may be had on

application to the manufacturers, The Globe Ventilator Co., Troy, N. Y.



New Office for Wayvell Chappell & Co.

Wayvell Chappell & Company have moved to a more central office and are now located at 358 West Madison St., Chicago, Ill. They were formerly at 4845 Ravenswood Park Avenue. They will carry a full line of their Automatic Ball Bearing Floor Surfacing Machines for demonstration purposes at their new location. They cordially invite their many friends to visit them in their new home.

(Trade Notes Department continued to page 134.)



Fibreweb the Wallboard for Farm Buildings etc.

Line the sides and ceilings of your farm buildings with Fibreweb—cheaper than lumber; and vastly more sanitary.

There are no cracks in Fibreweb to gather dirt and breed diseases, and it is absolutely moisture-proof. It is exactly what its name implies—a closely woven and compactly formed wall board, every fibre of which is treated in the pulp form to withstand moisture. Show the farmer how Fibreweb will make his stock more comfortable and healthy by keeping out the cold and rain, and eliminating the dirt and germs. The cost of putting up Fibreweb is insignificant compared with the resulting profit from the stock.

Fibreweb is also used for offices, homes, garages, partitions, etc. Send for literature on the hundred and one uses of Fibreweb, its prices, and how it will appeal to the farmer.

The Fibreweb Co.

Dept. A

Marion, Ind.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

This ROOFING CATALOG

(The Largest and Most Complete Ever Printed)

Will Help You in Your Work



The *Rex Products* catalog contains 112 pages and more than 180 pictures and illustrations. Besides complete instructions for laying all styles of asphalt shingles and prepared roofings, you will find in it a full description of each one of the 27 different *Rex Products* which we manufacture. You will also find much helpful information about slate, tile, asbestos shingles, tin and corrugated steel roofings.

We will send you this splendid catalog and a set of samples without cost or obligation to you. Write—

Flintkote Manufacturing Co.

90 Pearl St., Boston, Mass.
67 Beaver St., New York, N. Y.

659 Peoples Gas Bldg., Chicago, Ill.
Hennen Bldg., New Orleans, La.

REX STRIP SHINGLES

Will not blow up in the wind because the spaces between the shingles do not extend under the shingles in the course above, and so there is no opening for the wind to get under them and lift them. This is why Rex Strip Shingles make a *tighter* roof than any individual shingles.



REX STRIP SHINGLES
ARE ONLY ONE OF THE
REX PRODUCTS
DESCRIBED IN THIS CATALOG



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

NEPONSET



THE PRACTICAL WALL BOARD

On the plans given in this issue of the "American Carpenter and Builder" you will notice that Wall Board is specified as a lining in the barns.

This is just an instance of the new uses where a good practical wall board can be used.

NEPONSET Wall Board, as most architects and builders know, has been waterproofed on both surfaces and it is all finished so that when it is applied there is no further cost to the user. Of course, it can be painted, and in a great many instances is painted, when some other color is wanted, but as a matter of fact, painting is not necessary.

Until you see a good size sample of this material, it is really difficult to comprehend the possibilities of a wall board.

Every week carpenters, builders and contractors are catching on to the NEPONSET Shingle idea.

The point to let sink in is this: that the NEPONSET Shingle is a specialty and the men in each neighborhood who get started on it first become permanently identified with this and it means they have just so much business coming to them that otherwise they would not get.

It does not interfere with their wooden shingle business, necessarily, although, of course, in a great many instances the carpenter who has taken on these NEPONSET Shingles finds that his whole time is taken up in the application of this particular brand.

NEPONSET Shingles for Farm Building:

As a matter of fact, the shingles can be laid much faster than wooden shingles, on account of their twin shape and uniform size and on every shingle you save a nail.

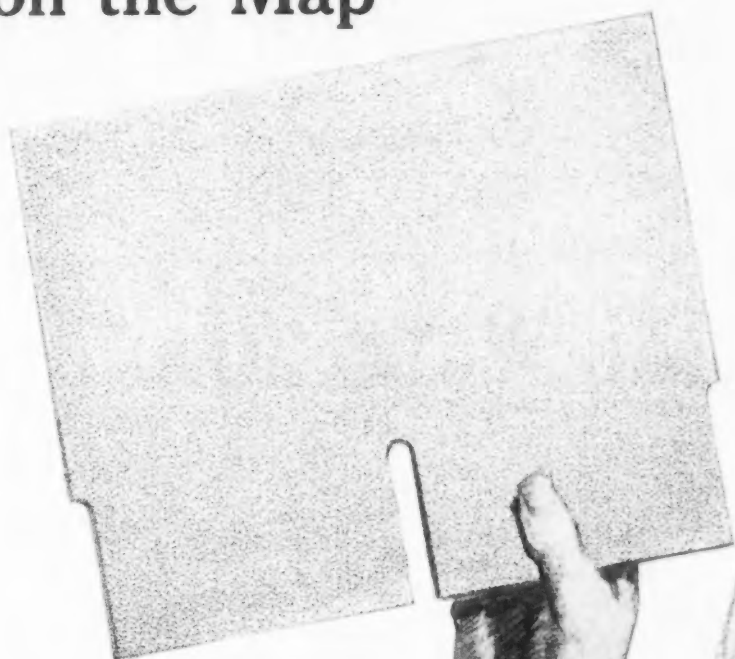
It is a great proposition from beginning to end.

These shingles are made in three colors, red, green and gray and are suitable for any kind of a building. The durability and good looks of the shingles are beyond question. Any man who knows anything about roofing materials will agree to this on looking over a sample.

SHINGLES



**"This Shingle Put *Me*
on the Map"**



The fact they are made from the same materials as Paroid Roofing is enough on this point. What we want to emphasize to you is the possibilities of the NEPONSET Shingle as a *big business proposition* for you.

We want you to fix up a working arrangement with our dealer who distributes these shingles in your town. We wish you would write us for further information.

Send for "Repairing and Building"

Bird & Son Dept. C **East Walpole, Mass.**
CHICAGO, 1434 Monadnock Block
NEW YORK, WASHINGTON
Canadian Office and Plant, Hamilton, Ontario

ESTABLISHED 1795

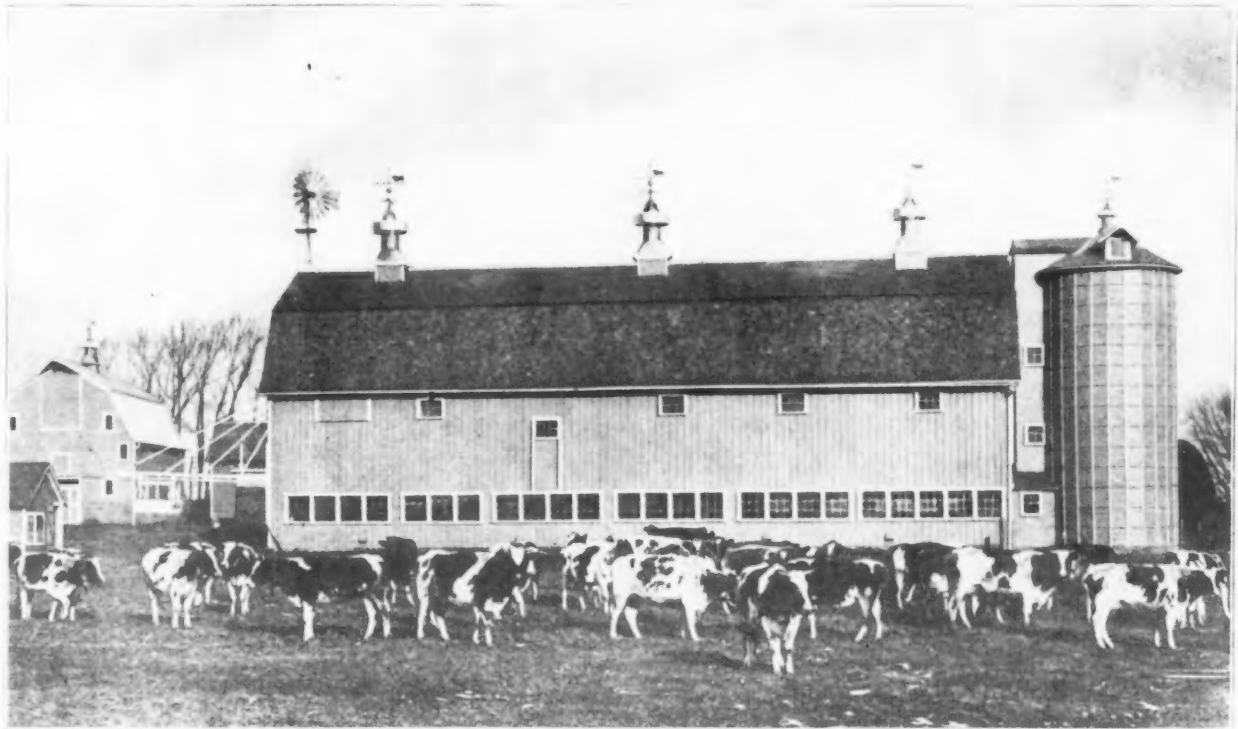
Bird &
Son,
East Wal-
pole, Mass.

Gentlemen:

Please send "Re-
pairing and Building"
and information about
Neposet Shingles.

Name.....

Address.....



Mitchell Mfg. Co. Equipment Used in the Notable Woodlawn Farm Dairy Barn.

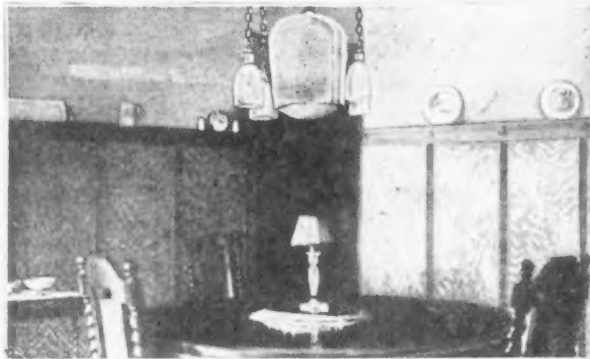
Mitchell Barn Equipment at Woodlawn Farm

The interior view on page 59 and the exterior photo above of the Woodlawn Farm, owned by Mr. G. M. Flinn, and located near Owatonna, Minn., give evidence of a large model dairy barn installation. Mitchell Sanitary Barn Equip-

ment is used in this barn and shows up well in the interior view. The type used here is known as the Mitchell Noiseless Chain-Lie Steel Stalls. The installation has been very satisfactory and has given the best service possible which is a

(Continued to page 136.)

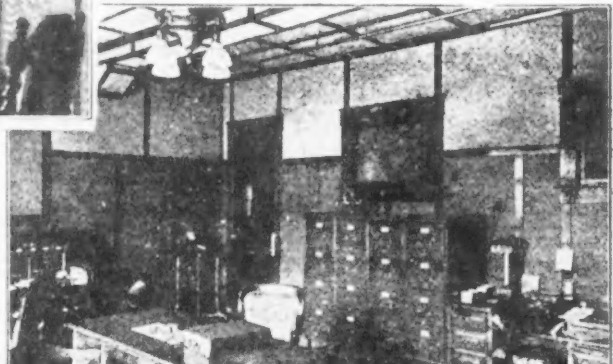
ROBERDS' IDEAL WALL BOARD



Ideal Wall Board is made of four sheets of impregnated wood fibre cemented together with asphalt cement under hydraulic pressure. The only wall board composed of seven distinct layers. It is absolutely waterproof, will resist heat and cold, is fire-retarding, will neither check, nor crack, nor rot or crumble, and can be halosanned, painted or papered, and the price per unit of its being used where the cost of other wall finishes is prohibitive.

Send for free samples, prices and catalog explaining in detail and goes for Robards' Ideal Wall Board.

The best looking wall finish on the market and the most economical. No contractor can afford to be without a working knowledge of this board. Robards' Ideal Wall Board will land more jobs for you, and give you a bigger profit on every job than any amount of close figuring on any other style of wall finish.



ROBERDS MANUFACTURING CO.
100 SPENCER AVENUE, MARION, IND.

The ultimate result of your work depends on the adaptability and simplicity of the operation of your equipment:—



Supreme and conclusive are the successes of **Ideal Power**.

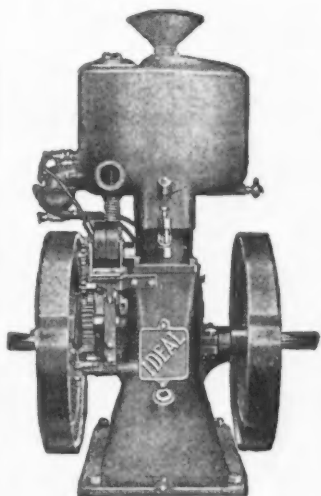
Their claims of **constant service** are proven by the verdict of many thousand contractors.

Power users find in **Ideal Power** a durable engine of simplicity, compactness and extremely modern construction and improvements.

Now, more than ever before, have contractors realized the importance of an **enclosed crank case**.

- the quicker action that is assured by **larger valves**.
- the efficiency of a **large oblong cooling hopper** of **frost-proof** construction.
- the use of **self-oiling bearings**, eliminating grease cups.
- all these points of superior construction and more are to be had in

Ideal Engines



- the power plant of the highest efficiency.
- the producers of "constant service."
- the power that is the result and has the backing of the greatest engine builder in the country.

You will certainly profit by equipping with Ideal Power

For speedy work use Ideal equipment:

Ideal Diaphragm Pumps
 Ideal Tank-Force Pumps
 Ideal Centrifugal Pumps
 Ideal Single Line Hoists
 Ideal Double Drum Hoists
 Ideal Reversing Hoists

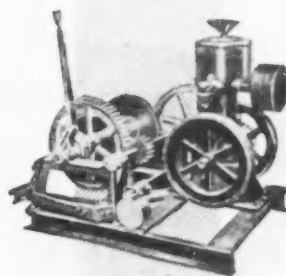
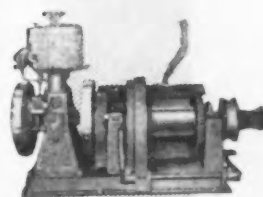
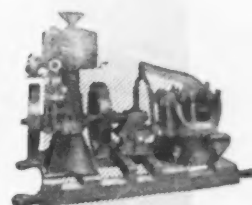
If you are in need of service—why not see us? Better send for our book 516

IDEAL ENGINE CO.

R. E. OLDS, Chairman

Formerly The Original Gas Engine Co.

630 Kalamazoo St., E. Lansing, Mich.



We want this back—Will you send it now?
 Send Engine Booklet 516
 Name.....
 Address.....
 Town.....
 State.....

good host for this type of stall in general and for the Mitchell type in particular.

Mitchell equipment, made by the Mitchell Mfg. Co., Milwaukee, Wis., is built in many other ways besides this particular style. They make both a steel and wood stallion and also equipment for horse barns, bull and calf pens, and all kinds of special barn fixtures for every purpose including carriers, tracks, ventilators, etc.

Further details and descriptions of their dependable line of equipment can be secured from the makers at the above mentioned address.



Farmer Taught Mr. Heppes a Wall Board Lesson

Most of us have had the experience of doing considerable thinking on an idea we thought was exclusively our own only to discover after all our effort that some other fellow had beaten us to the self-same goal years before. One interesting story in this connection is told by Mr. O. A. Heppes of the Heppes Company, of Chicago, manufacturers of Utility Board, Flexo-File roofings and other building products.

While on a fishing hunt in the Wisconsin lake district several years ago the party of which Mr. Heppes was a member decided one day to take a long tramp thru the woods and give the fish a chance to regain their declining appetites. They had not wandered far when they came abruptly on a large attractive-looking plot of farm land with growing crops, stables, well-looking buildings and a general impression of up-to-date ideas.

"It was while he was showing us his barn and outbuildings," said Mr. Heppes, "that I received the pleasant surprise which I shall always remember. I noticed something unusual about the walls—something familiar, in fact. I stepped closer and laid my hand on the surface. Yes, sir, it was wall board

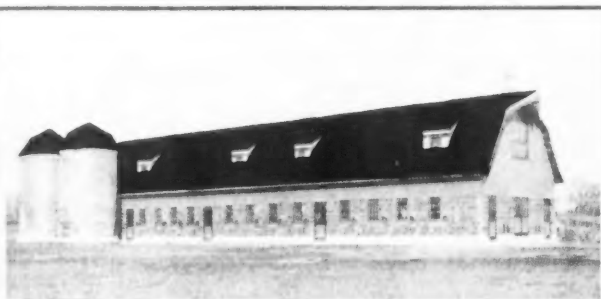
—on the walls of a barn—but that wasn't all. That wasn't the big surprise. It was Utility Board. That's the thing that took me off my feet—that shattered the pet idea I had been nursing for months—to announce Utility Board's adaptability for farm use especially in the barns and outbuildings. I asked the man, of course, as much as I could about his experience. His reply strengthened my conviction in the feasibility of which I thought was my own pet idea—for the Utility Board we saw on those walls had actually been up two years—with no perceptible sign of wear and with no visible effects from wind, weather or wet."

Do you wonder that Mr. Heppes wired his office as soon as he could reach a telegraph station to get busy and build up sales of Utility Board for farm use without delay or that his company has met with such unusual success in selling Utility Board for this purpose? If you really want to hear the rest of the story fully, just write to Chicago to the Heppes Company and ask them to tell you what they know about Utility Board for farm use. They will gladly supply full information and samples if you wish.



Rising and Nelson Slate Co. Open Architects' Service Department

The Rising & Nelson Slate Company, West Pawlet, Vermont, announce the opening of their Architects' Service Department, under architecturally trained and experienced management, in Room 1058, Marlborough Building, 47 West 34th St., at Broadway, New York City. This department is intended for architects, builders, and specification writers for the discussion and solution of roofing problems of all kinds. In connection with this there will be a sales office and a display exhibit of roofing materials. Our readers are cordially invited to take advantage of this arrangement if they desire to do so.



Model Barn of Endowood Sanitarium, Towson, Maryland.
Arthur West, Builder. Roofed with

Hudson Asphalt Shingles

Hudson Asphalt Shingles are surfaced with Red or Green Slate in their natural unfading colors. No painting or staining needed. They add beauty and durability to any building. Leakproof and Fire-resisting.

Protection Brand Roofing

For Barns, Stables, Factory Buildings, etc. Gravel or Sand Surfaced. Pat. Nov. 18, 1902. Has 6-inch lap, with all joints covered. Leaks at the joints are impossible.

Hudson Brand Asphalt Felts

For sheathing purposes. They keep buildings warm and dry and reduce coal bills. Dealers and Builders handling Hudson Asphalt Roofing Products satisfy their customers and increase their business.

Samples sent free postpaid on request.

ASPHALT READY ROOFING CO.

Room 453

9 Church St., NEW YORK



Before you lay your first roofing job, put on your first porch covering, or re-lay any old roofs this Spring

INVESTIGATE CON-SER-TEX

It costs very little. It is easy to lay, and adheres tightly to the surface, giving the porch, the roof, piazza, or sleeping balcony a neat, clean, trim look. It is the ideal covering for the garage roof and outhouses.

CON-SER-TEX is a scientifically treated cotton duck which is waterproof and will not mildew, absorb moisture, nor shrink.

Write for generous sample today

William L. Barrell Company
8 Thomas Street - - - New York

Chicago Distributor:
Geo. B. Carpenter & Co.
Wells and Michigan Sts.

California Distributor:
Waterhouse & Price Co.
San Francisco, Los Angeles



COLOMA PUBLIC SCHOOL, COLOMA, INDIANA.

Architect, Layton Allen, Indianapolis, Ind. Contractor, James T. Boswell, Bloomingdale, Ind.

A school where the kiddies are safe from fire. It is covered with

Ambler Asbestos Century Shingles

which means that the roof can neither burn nor carry fire to other buildings—a roof that is storm tight and secure against driving rains and moisture—the tightest freezes and the heaviest snows.

It means a roof that will hold its efficiency and its color without painting or repairing. It is safest for the children—cheapest for the taxpayers—and better for the building.

Every such roof you recommend and install is a permanent advertisement of the service you can render. It will stand always as a recommendation of the good judgment of the man who is responsible for its being there.

It makes a roof you can point to with pride. A roof that you need but show to your prospective customers to get their business.

Its appearance—its durability—its known and proven virtues are the strongest advertisements you can get.

Try it on your next customer. In the meantime let us send you samples—prices and literature.

Let us tell you how we can help you build a bigger roofing business.

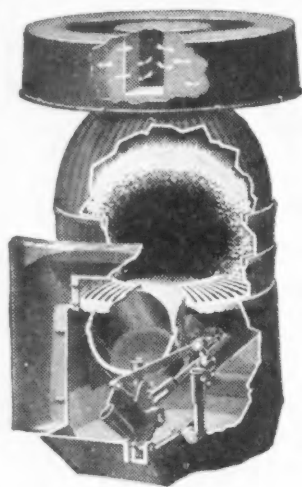
Just write on a post card "Tell me more about Ambler Asbestos Century Shingles."

KEASBEY & MATTISON CO., Factors

Dept. A2, Ambler, Pa.

Branch Offices in Principal Cities of the United States

Cut Your Coal Bill With a New-Feed U



Contractors, builders and architects, think what it means to you when you can say to those for whom you are building, "I can guarantee a saving of $\frac{1}{2}$ to $\frac{2}{3}$ of your coal bill if you will install a New-Feed UNDERFEED furnace or boiler." Think what a personal pledge like that will bring to you in prestige and in the confidence of your clients.

Guaranteed by a Million Dollar Corporation

One of the largest and most successful manufacturers of heating equipment backs you when you warrant the New-Feed UNDERFEED—it must make good or we make good. Please remember that the New-Feed UNDERFEED is not new or untried. Its country-wide reputation

is the result of actual fuel saving performance. Thousands of letters from delighted users testify to this.

Save Your Clients' Coal Money

The yearly coal bill is one of the largest and most dreaded items of household expense. You will make every client whom you persuade to install a New-Feed UNDERFEED an everlasting booster for you and your work on account of the saving of $\frac{1}{2}$ to $\frac{2}{3}$ of coal bills which the use of this system insures. You owe it to your best interest as well as to those of your clients to recommend and install heating equipment which will give lasting satisfaction, deliver an ample volume of clean even heat regardless of the weather, with the least possible amount of care and attention, and at the lowest possible cost of operation. Build with an eye to future business by always keeping in mind present service. Specify the Williamson New-Feed UNDERFEED for all your buildings and your customers will come back for more.

The "Candle Principle"



The New-Feed UNDERFEED is specified and recommended by builders and architects everywhere, because it is built on the correct combustion principle—the

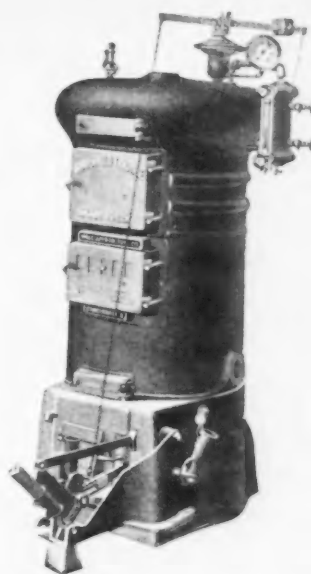
Bills $\frac{1}{2}$ to $\frac{2}{3}$!

UNDERFEED Heater

principle of an upright burning candle. Coal is always below the fire so perfect combustion is not hampered by a smothering mass of coal as in the old-fashioned top-feed. And because the fire is always on top, smoke, gas, and soot are consumed and turned into live heat. Cheap slack or run of mine soft coal or pea or buckwheat hard coal will give the same even cleanly heat as the highest priced coal burned in the ordinary way. The attention of a fifteen year old boy twice a day for the simplest firing operation and once a week for the removal of ashes is all the labor required.

Get Our Proposition

Learn more about the New-Feed UNDERFEED. Tear off the coupon below, sign and mail. Get the full details of the special money-saving proposition we are now offering to the building trade. We help you to sell the New-Feed UNDERFEED and back you every step of the way. Besides our comprehensive system of following-up prospects and helping you to get the business, we maintain a well equipped engineering department for the preparation of detailed heating plans and estimates. We do all in our power to make every job you sell a perfect one. The New-Feed UNDERFEED is adapted for warm air, steam, hot water, vacuum or vapor heating. In addition to the furnace or boiler we can furnish the piping, registers, radiators, valves and all equipment necessary to install, together with complete working plans or instructions. We appoint only one representative in each locality so write today—right now.



THE WILLIAMSON HEATER CO.

157 WEST 5th AVENUE

CINCINNATI . . . OHIO

THIS COUPON BRINGS FULL INFORMATION

THE WILLIAMSON
HEATER CO.
157 W. Fifth Ave.
Cincinnati, Ohio.
I would like to know
how to sell clients and
bills from 1 to 100
recommending the Williamson
New-Feed UNDERFEED.

Name _____

Address _____
(Mark with X after address interested in)

My dealer's name is _____

My business is _____

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

Louden Barn Equipment and Building Hardware

Garages are being built all over the country and there is a fine opportunity for the builder to make a nice little profit on this class of work. The way he can do this is to get a line on garage and garage door equipment so that every job he does will be so satisfactory that the owner will recommend him to his friends for that class of work.

The accompanying illustration presents a type of garage door hanger that has many advantages. Once it is open it stays that way until it is purposely closed. It can't blow shut and break lamps. It does not occupy much space as it runs on a curved track that cuts off a very small part of the corner. One of the three sections of the door is hinged so that it can be opened as a single door so that it is possible to enter the garage without sliding the entire door back. With this equipment the door can be made as wide as the garage and no valuable space is wasted.

The Louden Machinery Company, Fairfield, Iowa, also have a plan book on farm buildings that will be mighty valuable to any builder.

Many different styles of barns and other farm buildings suitable for all conditions are to be found in this book. Copies can be obtained by our readers for the asking. The book will be particularly useful for reference purposes when a farm building is being considered.



Roberds Wall Board for Dairy Barns

Roberds "Ideal" Wall Board offers great opportunities for dairy men, farmers and stock owners, as well as for interior home finish. There are great possibilities for the use of wall board on account of its being light in weight and coming in large panels, making application easy. There could be no



Garage Doors Hung on Louden Hangers and Curving Track

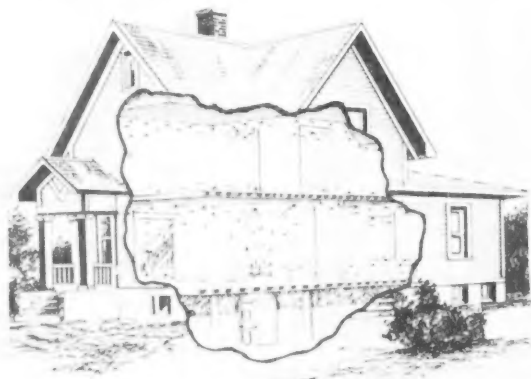
more sanitary material used for dairy barns and stock barns as this prevents dust and seeds from pouring down the cracks from the mows above. An interesting example

(Continued on page 162)

A New Field for Profit

INTERNATIONAL "Onepipe" Heater

OPENS entirely new field for profits to contractor. As it has only one pipe, it requires no skilled labor, or tools (other than a screwdriver, saw and hammer) to install; costs little more than a wood stove and is far superior in heating efficiency. It represents a splendid line for you to actually handle and sell as well as specify.



Will comfortably heat every room in an average house of 100 rooms or less. Heat rises from single register through open doors and upstairs into every room. Action is positive, a fact readily proven. Does not heat cellar.

YOU Can Sell Many

There are many old houses in your locality—particularly among farmers—that are uncomfortably heated with stoves. Without ripping a house apart, you can install our "Onepipe" Heater, providing your customer with a thoroughly efficient and economical heating system that will rightly please him, and make a good extra profit that you would otherwise miss.

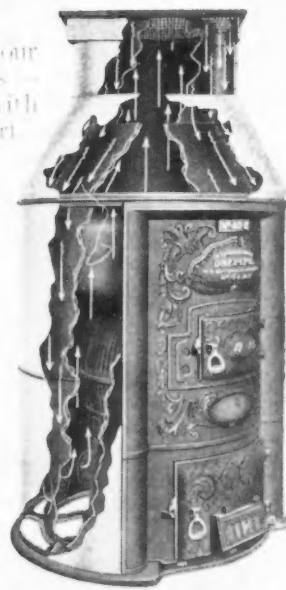
If you'll reflect a moment, you can think of plenty of homes where this furnace can be easily installed and could readily be placed.

Write for complete proposition. Booklet, Guarantee and Trade Agency Arrangement.

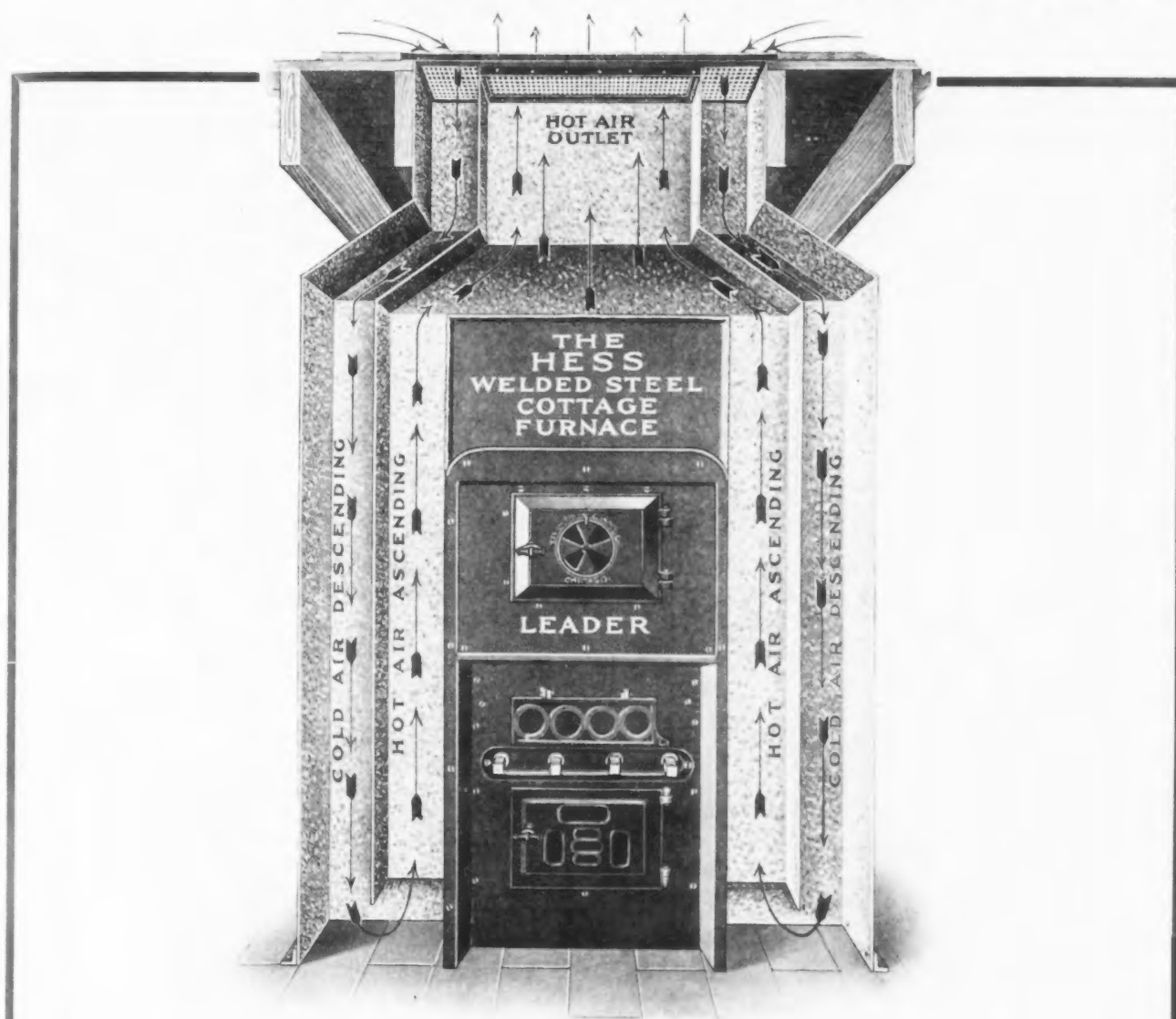
INTERNATIONAL HEATER COMPANY

Makers of the Largest Line of Heating
Apparatus in America
Maple Street, Utica, N. Y.

INTERNATIONAL "Onepipe" Heaters are advertised in the farm press and are guaranteed with 10 years, or 100-day trial basis. Full proposition booklet, containing complete details, is available.



HESS WELDED STEEL PIPELESS FURNACE



Not to supersede, but a mate for our regular Welded Steel PIPE Furnace—

*Just the thing for
Bungalows, Cottages, and Large Rooms*

Costs no more than a base burner—does better work on less fuel. No horizontal pipes nor air ducts needed. Warms by circulation; the hot air going up through the center of the register, the cold air flowing down through the ends.

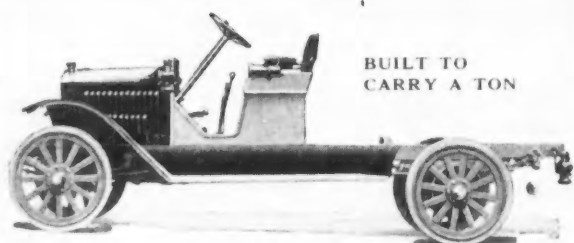
SPECIAL TERMS TO CONTRACTORS

Not sold through dealers, but direct from our factory

Hess Warming & Ventilating Company

1220B, Tacoma Building, Chicago

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



A New KisselKar Worm-Drive TRUCK \$1250

A TON job of unmatched construction and capacity. Without question the market's biggest value at the price. Has the most approved type worm-drive rear axle construction, which carries the weight on heavy steel tubes.

These axles can be taken apart and reassembled without removing from the truck.

KISSELKAR TRUCKS

If you are interested in economical delivery and sound truck construction get the full specifications of the new KisselKar "Tonner."

Five Other Sizes

1000 lbs. to 6 Tons

Send for big portfolio with five hundred fine illustrations of Kissel Kar Trucks in service—then ask us to figure on your haulage problem. You incur no obligation.

Write today.

Kissel Motor Car Company

546 Kissel Avenue, Hartford, Wis.

Sales Agents: Boston, Philadelphia, Chicago, St. Louis, Milwaukee, Weymouth, Kansas City, St. Paul, Minneapolis, San Francisco, Los Angeles, Oakland, Rochester, Buffalo, Denver, Omaha, Cleveland, Detroit, Toledo, Columbus, Baltimore, Pittsburgh, Duluth, Salt Lake City, Dallas, Hartford, Conn., New Haven, Conn., Providence, Marshalltown, Ia., Madison, Montreal, Toronto, Calgary, Victoria and three hundred other principal positions in the United States and Canada.

Roberts "Ideal" Wall Board use is illustrated on page 61 of this magazine, the dairy barn of Green Acres Farm, Manchester, N. H.

Roberts "Ideal" Wall Board has not only proven to be of great value in lining the interior of barns, but has proven itself an ideal material for temporary, and in fact for permanent buildings of lighter construction on the farm. With a few 2 by 4's for framework, and by the use of wall board, buildings can be quickly and permanently erected. Wall board can be used for both side walls and roof on the smaller type of buildings, by keeping the surface of the board painted with house or barn paint.

The Roberts Manufacturing Company has enjoyed a remarkably healthy growth from a comparatively small beginning, until today it has trade representation in practically all parts of the United States, New Zealand and South America. They have new and up-to-date factory buildings equipped with the best and latest machinery for the economical manufacturing of wall board. We urge our readers to investigate the proposition which this firm is now advertising so extensively.



A Convenient Hand Mixer

On all kinds of concrete work there is an opportunity for a saving in time and labor many times by the use of a portable, light mixer that will do quick, efficient work. Even if the builder has a large power mixer, it is often convenient to have a smaller mixer on the job and for the small job and the small contractor the light mixer is indispensable.

For this light mixer work the Northfield hand mixer has shown remarkably fine results according to the letters that they have received from both large and small contractors. The mixer is very light and easily handled, as can be seen from the illustration. It can be arranged to operate by power if desired. The makers say that it will handle from 30 to 90 yards per day, according to conditions. They make this in two types, either the dry and wet mixer or the slush mixer. The slush mixer is particularly recommended for a concrete contractor's machine.

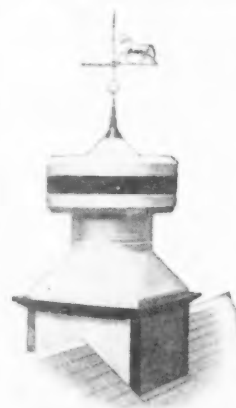
This mixer is a product of the Northfield Iron Company, 402 Water Street, Northfield, Minn., who are also the makers of the Northfield Aerodome shown in the other illustration. This is a high-grade ventilator built extremely strong so as to give the very best quality of service. It is really advanced and all parts, including braces, bolts, etc., are made rust-proof so as to guarantee high quality service. The base is made in one piece and it is shipped ready to be put right down on the roof and bolted in place.

The descriptive literature of this concern telling of their products can be obtained by writing them at the above mentioned address. The details of both these products will be of interest to many of our readers.

Trade Notes Department continued on page 160.



Northfield Hand Mixer.



Northfield Aerodome.



BUY "BUILT-IN" SERVICE WITH AN INTERNATIONAL MOTOR TRUCK

A TRUCK good enough to win the Medal of Honor at San Francisco and which holds the record for volume of motor truck sales, is good enough to be considered by any contractor who is thinking of buying a truck. This "built-in" quality means better service from the International Motor Truck, steadier running, fewer repairs, lower up-keep, longer life and a larger territory covered.

THAT MEANS LARGER NET PROFITS

International Motor Truck prices compare favorably with the prices asked for any other truck of equal capacity and quality. There are four models:

MA—1,000 lbs. capacity	air cooled	\$ 600
M—1,000 "	water cooled	710
E—1,500 "	" "	950
F—2,000 "	(Chassis only)	1500

All prices cash f. o. b. Akron, Ohio

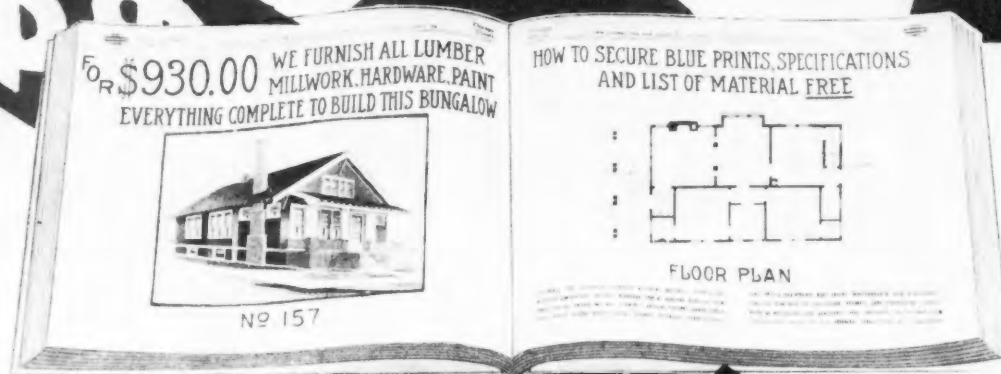
Write for complete information

**INTERNATIONAL HARVESTER
COMPANY OF AMERICA**
(INCORPORATED)

70 Harvester Building

CHICAGO, U.S. A.





Write for Estimate

Send us your lumber and millwork bill for our free estimate. We will quote prices including all freight charges direct to your railroad station, that you can tell actual dollars and cents what we save for you on your present requirements. This service is FREE.



No. 135

For \$1,000 we will furnish complete all lumber, millwork, hardware, spouting, paint—everything except masonry and labor to build this 8-room house, and include plans free.



No. 113

For \$800 we will furnish complete all lumber, millwork, hardware, spouting, paint—everything except masonry and labor to build this 7-room house, and include plans free.

Free Architect's Blue Prints

You do not need to have costly plans prepared by high-priced architects, thus adding to the cost of building, because we have had just such plans prepared for us by some of the ablest licensed architects in the country. These plans are complete in every detail and include a full set of specifications. Our FREE PLAN BOOK tells how to secure these plans without one cent of cost to you. A contractor will find this book of the utmost assistance in securing new trade because with it he can show his customers newer and better designs that may be built for less money.

Houses of Standard Construction

Our buildings are of standard construction. They are built from high-grade guaranteed material with all cutting and fitting done by the carpenter on the job. They are not "ready-cut," "factory built" or "freak houses" in any sense of the term, but are erected as any house must be put up to secure best and most lasting results. Practical builders will readily appreciate the importance of this feature. It means more work for them and a better and less expensive building for their client.

TWO BIG FREE BOOKS

We want every carpenter, contractor and builder to have a copy of our big, free catalog, whether or not he is now in need of building material. It will keep him in touch with the very lowest prevailing prices and prove an invaluable guide to right buying. "Plan Book of Modern Homes" is filled from cover to cover with designs of convenient bungalows, handsome suburban residences, town houses, practical country homes and barns. Write for either or both these books today. Both are free. A postal request will bring them by return mail, or fill out the coupon and mail it at once.

CHICAGO MILLWORK SUPPLY CO.
AMERICA'S GREATEST SASH AND DOOR HOUSE

1422 West 37th Street

Chicago, Illinois

Save 50%

Free Books

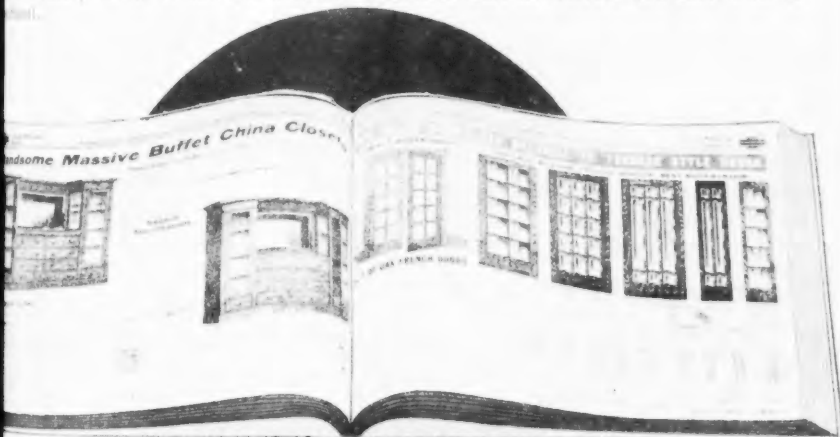
Save \$5 to \$500 on Every Order for Building Material

BUY your lumber and millwork direct. Every contractor, carpenter and builder should have our big free catalog of building material—the book of 8000 price bargains. A copy ready and waiting for you and will be sent free, postage prepaid, at your request. The tremendous saving afforded by our method of supplying building material direct to the actual builder has proven a boon to thousands. Let us show you how to make more money by saving more money.

W. B. Munger, Pres.

Everything in Building Material

Described in our big book. It quotes low, net, rock bottom prices for lumber, roofing, doors, windows, interior trimmings, cabinet work, colonnades, porches, hardware, tile, paints, wallboard, metal work, plumbing and heating equipment, electric machinery, water supply outfits and thousands of building specialties. A handy book of information and reference that no builder can afford to be without.



No. 158

For \$740 we will furnish complete all lumber, millwork, hardware, spouting, paint—everything except masonry and labor to build this 5-room bungalow, and include plans free.



No. 110

For \$755 we will furnish complete all lumber, millwork, hardware, spouting, paint—everything except masonry and labor to build this 6-room house, and include plans free.

Write for Either
or
Both Books Today

\$ \$ \$

COUPON

Date

Chicago Millwork Supply Co.,
1422 W. 37th Street, Chicago

Gentlemen: Please send your
FREE Books listed below to

Name

Address

Catalog No. 43, of Building Material
Plan Book No. 53, House & Barn Plans

%



In addition to providing a finish of sustained life to any desired color effect in stains, varnish or white enamel

Arkansas Soft Pine

has the decided advantage of being readily obtainable because of an abundant supply.

This wood therefore provides an interior finishing material at a comparatively

Moderate Cost

Due to the wide variety of figure which it possesses, ranging from the bold grain of flat sawn to the conservative pen line of the "quartered," Arkansas Soft Pine may be selected to harmonize with any desired interior decorative scheme.

It will provide a durable finish of lasting life when stained in mahogany, dark or light oak, silver gray, natural varnish or other effects.

Well balanced absorbing qualities, due to absence of rosin, make it a perfect base for white enamel treatment. The wood will not stain the enamel from underneath nor will the finished surface ultimately become dead-looking.

In short, it is a reliable woodwork.

Arkansas Soft Pine is trade marked and sold by dealers. If the one which you patronize hasn't it, let us know. Literature, stained and natural samples free on request. Address Dept. C.

Arkansas Soft Pine Bureau
Little Rock, Ark.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

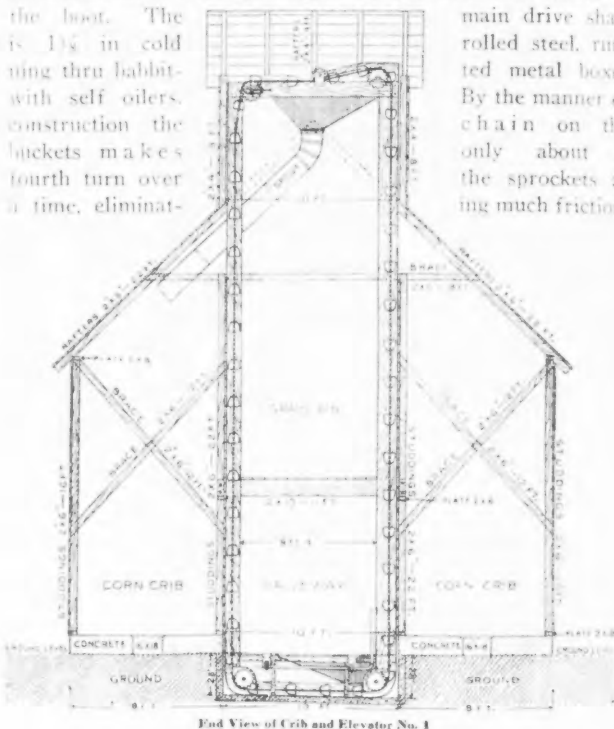
Meyer Co. Elevator Plans

Carpenters and builders will please pay particular attention to the plans and illustrations in this edition for the building of up-to-date corn cribs and granaries.

The illustration shown here is the end view of a frame work of a crib having an inside elevator installed. This elevator is the style No. 1, manufactured by the A. F. Meyer Mfg. Co., whose advertisement also appears in this issue.

This style No. 1 can be permanently installed and makes a decided improvement for a complete crib and elevator construction.

This elevator, style No. 1, has H-4 special riveted chain, No. 16 gauge steel buckets, 7x7x14-in. in size, and has galvanized steel for the hopper in the head and chute in the boot. The main drive shaft is 1½ in. cold rolled steel, run through hub with self oilers. By the manner of construction the buckets make fourth turn over a time, eliminating much friction.



End View of Crib and Elevator No. 1

The one section of the elevator goes up directly on the one side, the elevator crosses on the top and turns on the opposite side. The sections can be placed either in the driveway of the crib or can be boxed inside of the crib.

On this No. 1 elevator, the company does away with both the receiving conveyor and lifting jack, using their wagon dump.

The elevator boot and head are shipped assembled as consistent; the sections are all cut and fitted to size, and the machine is nicely installed.

This company also manufactures One Side machines and will gladly send you a free set of model crib and granary plans, together with their complete catalog. Write for a copy today. Address A. F. Meyer Mfg. Co., Morton, Ill.



The Hart Bucket Elevator

The most important part of a granary is the elevator that handles the grain in it. A builder may make a fine looking granary, but, if the arrangement is not just right to accommodate the elevator, the building will never be entirely satisfactory.

There is only one really good way for the builder to handle this sort of work. He ought to get acquainted with the equipment that is to be installed and then he will know how to build so as to get the best results. Arrangements such as the one shown in the accompanying illustration will give

(Continued to page 168.)



This structure, at Augusta, Ga.,
is still a substantial home after 101 years of
honest service.

During much of its long life it has been without the protection
afforded by reasonably frequent paintings — exposed to the trying in-
fluences of a very warm, moist climate.

It is constructed throughout of

Southern Yellow Pine

"The Wood of Service"

Southern Yellow Pine today is a better, more dependable building
material than it was 101 years ago, because, under the grading and in-
spection rules of the Southern Pine Association, it is much more carefully,
skilfully and accurately manufactured.

Under those rules all question as to quality specified in timbers, dimen-
sion and trim is eliminated. That, conjoined with the wood's inherent
qualities of strength, workability, durability and beauty, makes it the
most valuable all-purpose structural material in the world today.

It costs less because it is plentiful. It is available in standard sizes and
grades everywhere.

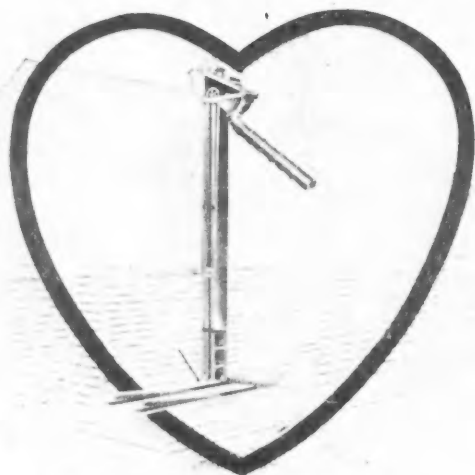
If you would know more of the possibilities in the present-day uses of
Southern Yellow Pine—the possibilities in Service, Saving and Satisfac-
tion—ask us. The information is *Free*.

Southern Pine Association

676 Interstate Bank
Building



New Orleans
Louisiana



Hart Elevator Installed in High Crib.

good service and insure the correct operation of the elevator.

This building, equipped with a Hart bucket elevator, is arranged so that all the space is utilized. The corn cobs on each side extend almost to the roof, while grain bins are placed over the driveway. All parts of the cribs and bins are filled by means of the distributing spout connected to the head of the elevator in the cupola.

This type of equipment is almost invariably driven by a line shaft which is operated by a gasoline engine either inside or outside the crib. A horse-power drive can be used if desired. A log dump is used to empty the grain into the foot of the elevator. The buckets and the general construction of the elevator are strong enough so that the equipment has been used to handle coal, sand and gravel, tho it is intended primarily to handle grain of all kinds.

Hart bucket elevators are made by the Hart Grain Weighing Co., Peoria, Ill. Their catalog describes the construction of their elevator more fully. In case a crib is to be erected they will be glad to furnish plans and specifications that will help in getting a crib that is entirely satisfactory. Our readers who are interested should write to them for further particulars.



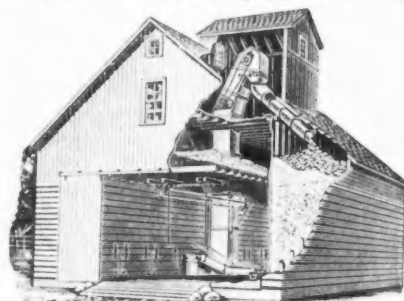
High Cribs and Granaries Made Possible by Stationary Cup Elevators

There are many advantages to the high crib or granary. In the first place it does not cover very much ground and makes it possible to have all the grain in one building, where it is easily handled. A gasoline engine puts it in and gravity takes it out.

If a builder understands the best way to construct cribs and granaries, and knows all about their equipment, he can get many good jobs in this class of work.

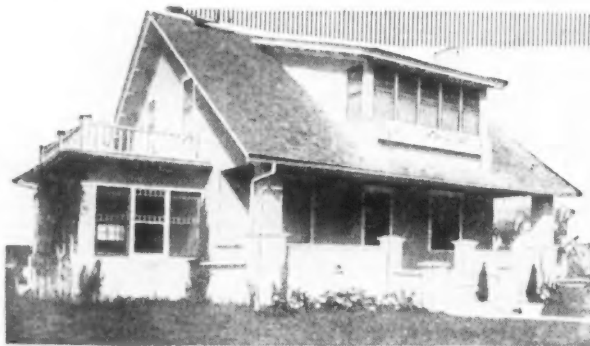
If you can show the farmer that he will save money and labor by having a first-class granary, he will build one.

The Meadows Mfg. Co., Pontiac, Ill., have a crib plan book that will help the builder considerably in getting a line on the present-day methods of this kind of building. It shows many details of the cribs and also describes the instal-



Send for Large View Showing all Details of Meadows Elevator.

(Continued to page 170.)



You Can "Boost" Stucco with Big Profits

—Profits from a money standpoint and profits from the standpoint of reputation. It takes a good contractor to build stucco houses; but the secret of stucco is laying it on a basis of

Kno-Fur Expanded Metal Lath

—Does away with furring and sheathing

"Kno-Fur" is built with the plaster gripping mesh that gives superiority and certainty to every one of the types of metal lath in the North Western line. It is braced by a diagonal "U" shaped rib that is constructed like a miniature bridge truss and more than fulfills all rigidity requirements.

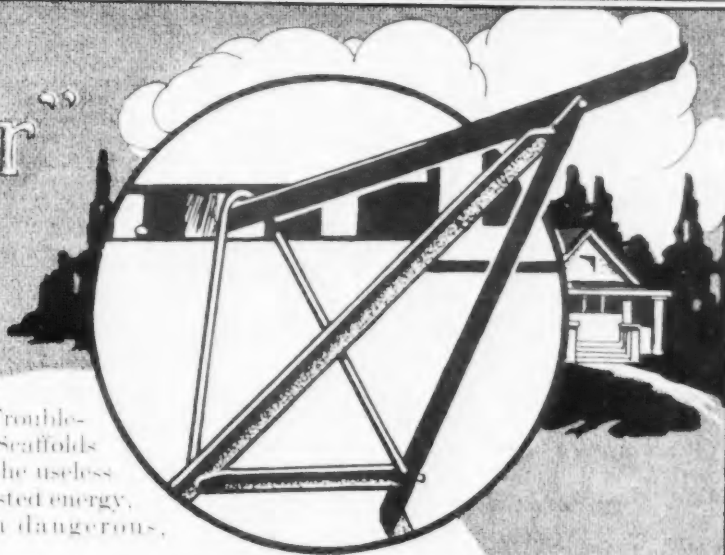
Its use will save you material, labor and uncertainty as to the permanence of your stucco work.

Send at once for booklet 33 and let us give you further particulars.

NORTH WESTERN EXPANDED METAL CO. 903 Old Colony Bldg.
Manufacturers all types of Expanded Metal CHICAGO, ILL.



Let the —
 "Trouble-Saver"
 Scaffold
 bear your
 burdens



TIME
WASTED

"Trouble-Saver" Scaffolds cut out all the useless expense and wasted energy, connected with dangerous, wooden planks.

Just figure up how much lumber you waste on scaffolds; how long it takes your men to build them, and tear them down; how cautiously and slowly your men have to work in dangerous places, with every once in a while, an accident.

Then see what you can do with a

ACCIDENTS

"Trouble-Saver"

TRANSPORTATION

You can do a half-day's work in ten minutes—actually save that much time in slinging over brackets. Don't have to drive any nails—don't have to bother with screws or bolts. Simply hook the bracket around the studding.

And the "Trouble-Saver" stays where it is put without any wobbling, or tearing loose. The two legs hold it absolutely rigid.

When you take the "Trouble-Saver" down, simply unhook it from the studding, fold it up, and load about twice as many to the square yard as any other scaffold.

Every "Trouble-Saver" is an investment, not an expense. An investment not only for big financial returns, but for the prevention of accidents and the preservation of your peace of mind.

And a small "Trouble-Saver," the "Snapping Turtle" Lightning Shingler is just as efficient in its line. One man can nail on five hundred more shingles than he can with any other bracket.

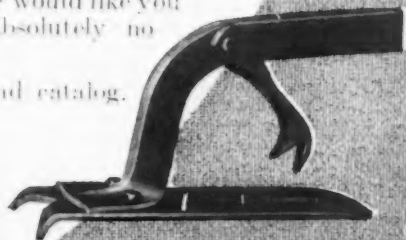
LUMBER
BILLS

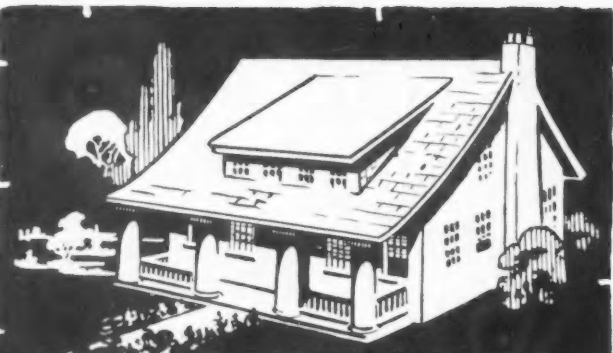
USE OUR BRACKETS
FOR 30 DAYS **FREE**

In order to demonstrate that our brackets are an investment, we would like you to use them for 30 days with absolutely no obligation on your part.

Write today for our proposition, and catalog.

The Steel
Scaffolding Company
Evansville, Indiana





Profitable to You and Your Customer

Your greatest asset in business is the satisfaction of your customer. Give him what he wants at the price he wants to pay, and you've really **doubled** your profit.

For building construction, whether exterior or interior, you can specify

North Carolina Pine

"The Wood Universal"

with the assurance that your customer will be *more* than satisfied, both from the standpoint of economy and of appearance.

North Carolina Pine is today being more widely used than ever before. Its beauty and variety of grain adapt it most admirably to interior ornamentation. Its use for exterior purposes demands only the same discriminating care in selection and protection as other woods under similar conditions. *It has proven its worth in both fields.*

**Write for our Instructive
New Book**

We have compiled an elaborate and exhaustive booklet on North Carolina Pine for the information of contractors, builders and architects. It shows you most emphatically that "the wood universal" is a wood *most profitable*—to you and your customer. Write today.

North Carolina Pine Association
Norfolk, Virginia



NORTH CAROLINA PINE



lation of elevating machinery. Such information will be very valuable to the up-to-date builder. In many instances cribs have been built in which elevating machinery can be installed without very many changes. The builder can handle this in the best way if he understands the requirements of elevating machinery. Such work will mean a satisfied customer and more work in the future.

Copies of this book and their catalog of granary equipment will be sent out to any of our readers that are interested in this sort of work. Write today for your copy.



Build Your Granaries Right and Recommend the Right Elevator

A feature of the granary equipment shown here is a special hydraulic jack that is used in dumping the wagons. Oil is used for fluid in the jack. The oil is forced from the power cylinder to the lifting cylinder which lifts up the end of the wagon that is placed on the jack. The wagon is lowered by means of a lever that allows the oil to run back to the power cylinder from the lifting cylinder.

This jack is designed especially to work well with the elevator shown here. When it is used it is not necessary to depress the boot of the elevator into a pit, but a receiving hopper is used to carry the grain to the buckets in the elevator. Camp Brothers & Company also make a log dump that can be used with their elevator. In case this is used, a pit is built for the boot of the elevator. Also in this case the ceiling over the driveway does not have to be built so high.

The makers of this equipment say that the boot wears out more often than

any other part of the elevator, and they have taken special precautions to prevent this. The boot is built of cast iron with a No. 14 gauge steel bottom. This makes the boot almost indestructible.

The Camp Brothers & Company catalog contains complete descriptions and illustrations of their equipment. There are also many practical plans and suggestions as to the best methods of building cribs. This concern is located at Washington, Ill., and will be glad to send a copy of their catalog to any of our readers.

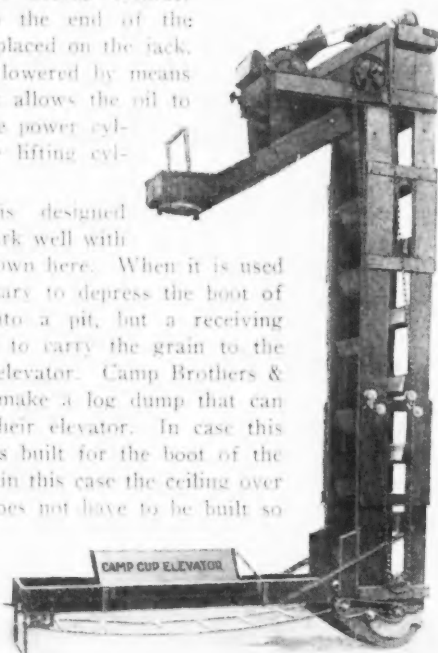


A Good Weather Vane—the Finishing Touch

Every well planned barn or garage should have a good weather vane on it. The best weather vanes are made of copper and finished in pure gold leaf. Such materials are bound to last for many years, and a weather vane of this kind will be a source of joy and comfort, and will be in keeping with good barn construction.

Many makeshifts for weather vanes are now being used on galvanized ventilators on barns. The ammonia gases generated will in a short time cause decay even for the best gal-

(Continued to page 172.)



Boot, Shaft, and Spouting Head of Camp Bros. Crib Elevator.

Why White Pine?

A Reminder of a Few Facts Every Experienced Carpenter Knows

It would be presumptuous for us to try to tell you men who are working with wood every day, anything about the superior qualities of White Pine. You know the facts enumerated below. We simply wish to remind you of them before the rush of another building season is upon you.

WHITE PINE

It Lasts Longer. Three centuries of building experience in America have proved that no other wood can withstand the attack of time and weather so successfully as White Pine.

It Holds Its Place Better. White Pine does not shrink, swell, twist, warp or rot. Once in place it "stays put," even after years of exposure in the closest fitting mitres and in delicate mouldings and carvings.

It Works Easier. Because of its softness and smooth, close grain, it works more easily under your tools. It does what you want it to do—without waste of time and needless wear on your tools.

Could Any Wood Do More?

There is still plenty of White Pine. If the lumber dealers supplying the materials for those for whom you are building are at any time unable to furnish it, we would appreciate the opportunity of being helpful to you in securing it.

Address, WHITE PINE BUREAU,
1235 Merchants Bank Building, St. Paul, Minn.

Representing
The Northern Pine Manufacturers'
Association of Minnesota, Wisconsin
and Michigan, and The Associated
White Pine Manufacturers of Idaho



Here's Why G. & B. PEARL Wire Cloth Stops Screen Expense

PAINTING, repairing, replacing screen—those are the expenses which make inefficient wire cloth a source of annoyance and money loss. When you screen with genuine G. & B. PEARL, you do away with painting, repairing and displacements—simply because PEARL is rust-proof as metal can be made, consequently makes a screen that is practically wear-proof.

G. & B. PEARL represents true screen economy. It outwears all imitations so far that no other similar appearing wire can be placed in the same class. From points of appearance, sanitation, durability and economy G. & B. PEARL is the one choice of the man who wants permanent protection.

For Permanently Screening Doors, Windows and Porches

GILBERT & BENNETT
PEARL
WIRE CLOTH

Made in Two Weights—Regular and Extra Heavy

The longer G. & B. PEARL is up—the nearer the color of the atmosphere it becomes. It is easy on the eyes, easy on the pocketbook and the one screen whose smooth meshes prevent the lodging of dust and dirt and grime.

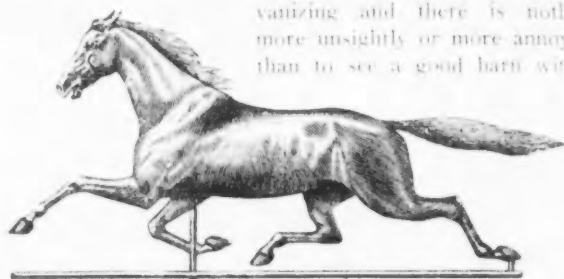
The genuine article has two copper wires in the selvage and a Round Tag bearing the name Gilbert & Bennett attached to the roll. Considering the fact that imitations are so decidedly inferior, real G. & B. PEARL is worth insisting on.

Go and have a talk with the hardware dealer who handles PEARL in your vicinity. Or, if you prefer, write our nearest office for samples and particulars.

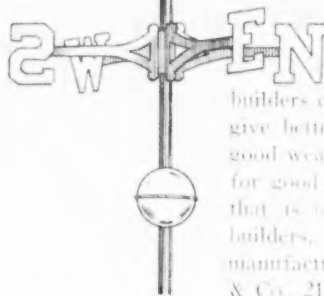
The Best Hardware Dealer in Your City Sells "PEARL"

**THE GILBERT & BENNETT
MANUFACTURING CO.**
Established 1818

Dept. A, 277 Broadway, New York
Dept. A, 35 S. Dearborn St., Chicago
Georgetown, Conn. Wireton, Ill. Kansas City, Mo.



A Washburn Copper Vane
Will Dress Up that
New Building.



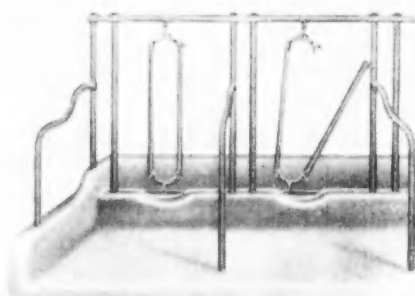
weather vane "out of
kilter."

Up-to-date country builders can earn more money and give better satisfaction by using good weather vanes for barns, and for good garages. This is a fact that is open for carpenters and builders. Good weather vanes are manufactured by E. G. Washburn & Co., 210 Fulton St., New York, N.Y. They have a catalog that is of interest to builders, to whom they will quote special terms and prices. Write them for it and build up a good weather vane business in your vicinity.



Franklin Barn Equipment

No one enjoys working with complicated machinery when he can accomplish the same result with simpler arrangements. The simpler a piece of apparatus is the easier it is to fix and the less chance there is of getting out of commission.



The automatic carrier shown here is made with no complicated parts and has no springs to get out of order. The lock

used on it is of the gravity type so no springs are needed.

The tracks are either the steel rod type or solid steel. The steel rod type has a desirable self-return feature. The carrier is given a shove from the barn and will run out to the trip, dump its load, and return automatically. The trip can be placed at any position on the track.

The station shown in the other illustration is also equipped with a gravity lock so that there are no springs to rust or get out of order. It is made of steel tubing and can be placed on either wood or concrete floors.

This equipment is made by the Franklin Barn Equipment Co., Monticello, N.Y. They will send complete particulars of their equipment to any of our readers on request.

(Trade Notes Department continued to page 176.)





Service Is Greater Than All Else Save Quality

Contractors who advise the use of Curtis Woodwork know that Curtis "On-Time" Service and Curtis Quality insure satisfactory profits.

1866
CURTIS
WOODWORK

"The Permanent Furniture for Your Home"

requires but little sanding, and deliveries are made "On-Time." Fast work and no waits mean better profits. It costs \$50 to use 75 cents' worth of sandpaper.

Everyone in our organization understands the importance of "On-Time" Service. We

have waited until we are sure before making this announcement.

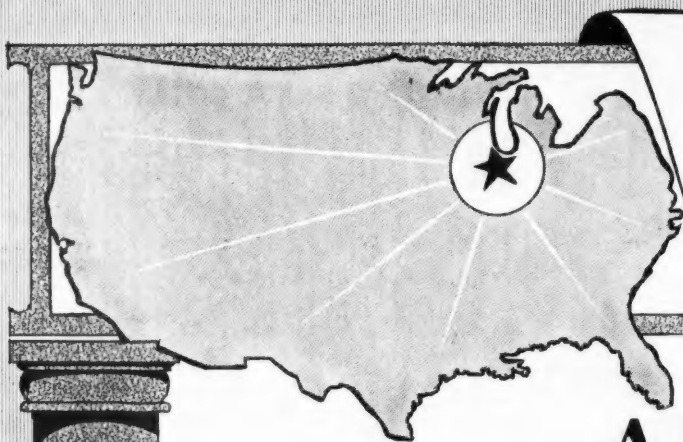
This "On-Time" Service will mean greater profits to you. Let us explain it more fully or let a Curtis dealer tell you about it. Just send us your name on a postal addressed to

The Curtis Companies, Service Bureau, 1400-1500 S. Second Street :: Clinton, Iowa

Manufacturing and Distributing Plants at

Clinton, Iowa Sioux City, Iowa Oklahoma City Lincoln, Neb. Minneapolis Wausau, Wis. Chicago Detroit
Eastern Offices at Pittsburgh and Washington

The Makers of CURTIS Woodwork Guarantee Complete Satisfaction to its Users. "We're Not Satisfied Unless You Are."



Look Before You Build

Here, under one roof, is the World's Greatest Building Shopping Center. Here the prospective home builder can see for himself just what his needs require. Here the contractor can get in direct touch with the people from whom he buys, and knowing them personally can better serve his clients and himself. Here the architect can become better acquainted with materials that he is asked to specify. Here can be bought practically everything that enters into the construction of a building, whether it be a skyscraper or a Bungalow.

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Walger Awning Co.
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Stormsafe Construction Co.
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Milwaukee Reliance Boiler Wks.
BOILERS.
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Kanawha Mfg. Co.
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Robt. W. Hunt & Co.
BUILDING RUBBER NECESSITIES.
W. H. Salisbury & Co.
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Casement Hardware Co.
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Atlas Portland Cement Co.
CEMENT ROOFING TILE.
Federal Cement Tile Co.
CINDERS.
Chicago Supply & Cinder Co.

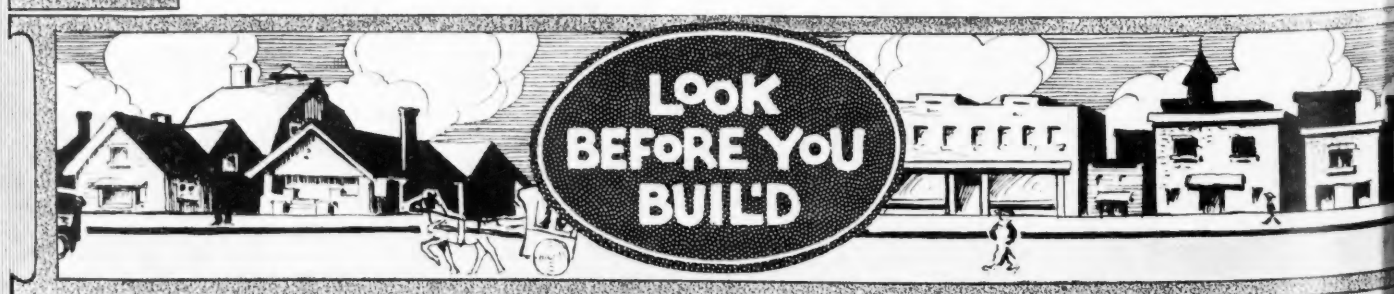
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GRANITE.
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Garden City Sand Co.
Thomas Moulding Brick Co.
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When writing or visiting any of the above firms, please mention the American Carpenter and Builder.

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Look Before You Build

On these two pages are the names of the most responsible and progressive Manufacturers in Building Materials. Use these pages—they will appear every month—as your Buyers' Guide. When in Chicago make this Exhibit your headquarters. A few hours on this one floor will save you days of time. Our location is central—Jackson Boulevard and Fifth Avenue and is right in the heart of things in Chicago. We are in business to save you time and money. Remember, "It's Free to See" and you will be cordially welcomed.



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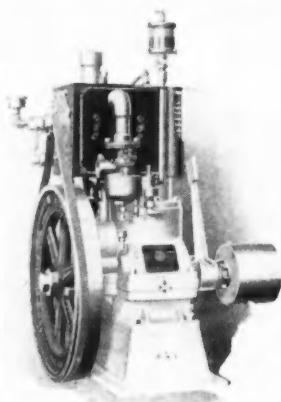
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Entire Second Floor, Insurance Exchange
CHICAGO, ILL.

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BEFORE YOU
BUILD





SERIES "F"
THE "New-Way"
Built in 4, 4½, 6
and 7½ H. P.

Preparedness Produces Profits

THE "New-Way" SERIES "F"

HERE is the latest addition to the famous "New-Way" line of engines. "New-Way" engineers have never followed "the other fellow" in gas engine designing, and the perfection of this particular engine is no exception to the rule.

The features that make it *different* and *better* are fuller protected by basic patents, and can be found on no other engine made. Like all other "New-Way" engines, it is "guaranteed for life" and always

**"GOES
AND
GOES RIGHT"**

It furnishes more power with less weight than other engines, which enables it to be moved about quickly and economically.

Uses no water to freeze in winter or run dry in summer.

Has high-tension magneto—automobile type carburetor—multiple disc clutch pulley—automatic lubrication.

No water pump—no gasoline pump—no open gears.

Enclosed crank case eliminates the possibility of dirt and dust reaching the working parts.

Before deciding on the purchase of an engine for that saw rig—woodworker, mixer or other machinery, it will pay you to write for the "New-Way" catalog No. 11, describing in addition to the Series "F" engines, a complete line of vertical and horizontal engines. The man who knows always specifies the "New-Way" on his power machinery.

THE "New-Way" MOTOR COMPANY
LANSING, MICHIGAN, U.S.A.
Exclusive Makers
14 PINE STREET

The Construction of Modern Store Fronts

We recommend to the attention of all our readers the series of descriptions and details of construction of modern store fronts that is commencing in this issue. We have always attempted to keep our readers posted on all the new and best things in the building field and we are sure that this course of instructive articles on modern store fronts will be of great value and interest to our readers.

Mr. Francis J. Plym, President of the Kawneer Manufacturing Company, Niles, Michigan, is the author of these descriptions and is furnishing the details showing various types of fronts. Mr. Plym is well known to the store front industry thru Kawneer products. He is perhaps better fitted than any one else to handle a series of articles on the subject of modern store front construction.

The details will be of great value to our readers as they will

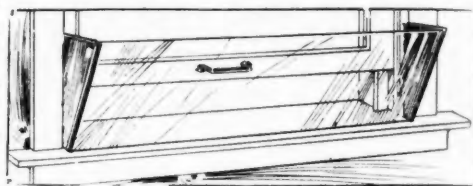


Illustration of Kawneer Window Ventilator, showing oxidized brackets in position, complete with glass.

form a complete reference volume for all kinds and types of store front designs. They will enable the builder to fit a style of front to each building that will be particularly suited to the business that is being carried on. For instance, this month a design is shown that will fit specially well the needs of a jewelry store. The expert advice that the builder will be able to give with the assistance of these details, will help considerably in closing contracts for this class of work.

Mr. Plym has offered to answer all letters dealing with special store front problems of all kinds. Our readers can put their particular problem up to him and be sure that they will receive advice of the best kind.

The Kawneer Manufacturing Company have been making their line of patented store fronts for the past ten years and have added various window and door improvements to their line from time to time. The illustration shows a window ventilator that eliminates the draft. It is one of their new items.



Ideal Engine Co. Absorbs Original Gas Engine Co.

The Ideal Engine Co., of Lansing, Mich., has absorbed the Original Gas Engine Co., the combined capitalization of the two being doubled—increased from \$150,000.00 to \$300,000.00. It is understood that the entire stock issue was taken up by those within the company.

The following are the officers: R. E. Olds, chairman; W. G. Brown, president; E. F. Cooley, vice-president; Bruce E. Anderson, secretary and treasurer; Chas. S. Smith, sales manager; and A. D. Wilkins, general superintendent.



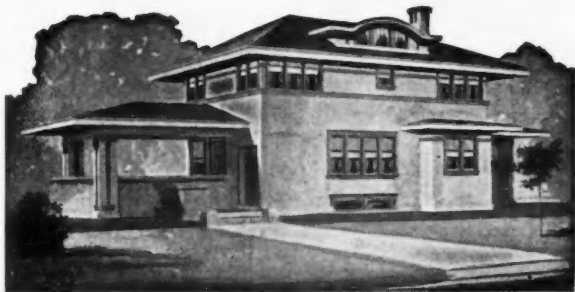
Delta Files for the Carpenter

One of the most important tools for the carpenter is the saw and a saw is only at its best when it is sharp. Its sharpness, and consequently its usefulness, depends on a file, provided, of course, the saw is a good one.

The hand saw files shown on page 178 are made in three lengths and sell at three different prices. The prices are fixed by the makers, the Delta File Works, so that the user is sure to get full value whenever he buys a Delta hand saw file. They are made of the highest grade crucible steel and the depth of tooth and the angle are the result of long experiments in an effort to get the most satisfactory saw file.

The shorter file is called the "Carpenter's Special," the

(Continued to page 178.)



Cement Houses and How to Build Them

This large book of 176 (8x11 inch) pages contains illustrated details of cement construction—standard specifications for cement—concrete blocks—general information concerning waterproofing, coloring, aggregates, mixtures, paving, reinforcing, foundations, walls, steps, chimneys, floors, etc., together with perspective views and floor plans of 87 stucco and concrete block houses.

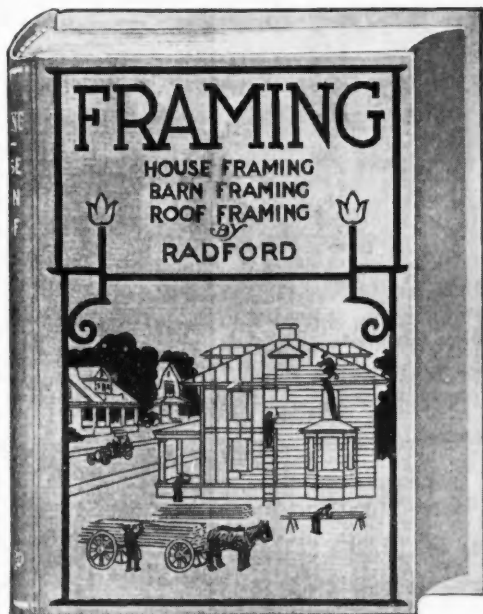
The illustrations show the houses exactly as they will look when built. All the floor plans are shown, giving the location and dimensions of all rooms, closets, porches, etc.

This Book Sent Free

Send in your subscription today and receive one of these books by return mail, **Free**, postage paid. Regular subscription \$2.00 per year.

American Carpenter and Builder
1827 Prairie Ave. CHICAGO, ILLINOIS

A Safe Guide for All Kinds of House, Barn and Roof Framing



356 pages, 6x9, bound in cloth. Over 100 illustrations, reproducing architects' original drawings and details. A wonderful help in the construction of houses, barns, roofs, giving clear and complete instructions for carpenters, builders, contractors, architects and draftsmen. It covers every problem with thorough and easily understood diagrams.

This book and a year's subscription to the American Carpenter and Builder for only \$2.00, the regular price of the magazine alone.

American Carpenter and Builder
1827 Prairie Ave., Chicago



The Bigger Market

The rapid increase in the demand for permanent, fireproof construction at popular prices has created a big market for dependable Concrete Blocks.

Many Contractors have realized this and are now supplying their trade with beautiful, permanent, fireproof Concrete Block structures at a cost as low as that of less desirable materials.

Ideal Concrete Block Machinery!

because of its interchangeable and face down principles enables these Contractors to make a wide range of concrete blocks in many sizes, shapes and with varied surface treatments.

This is a business proposition of proven merit that holds big returns for the man who has the ability to give this business the attention it deserves.

We are experienced in equipping of plants for the manufacturing of Concrete Blocks. Can we help you get started in this profitable business?

Ideal Concrete Machinery Company

1308 Monmouth Ave. Cincinnati, Ohio
Windsor, Ont., Canada



next the "Mechanic's Favorite," and the longest one is called the "Expert's Choice." The long stroke of the latter economizes the time needed to put a saw in shape, though many carpenters might prefer a shorter file for the reason that it may be more handy for them. The three different sizes



Delta Hand Saw Files, in 6½, 8½ and 9½-Inch Lengths.

make it possible for each man to suit his own personal ideas in the choice of a file.

You can secure Delta files from your hardware dealer or if he does not handle them, write to the Delta File Works, Philadelphia, Pa., and they will send further particulars and tell you where you can secure their product.

Look for the Delta sign and display at the best hardware stores, and remember the name, "Delta."

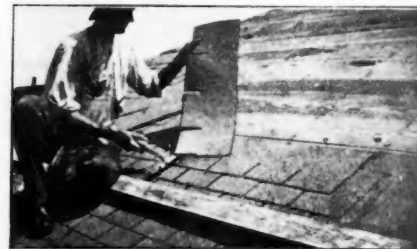


Speed in Laying Asphalt Shingles

There have been various articles in the AMERICAN CARPENTER AND BUILDER in which our readers have given records that have been made in rapid shingling with single wooden shingles. How much faster could they go if the shingles were fastened together in sets of four or five?



Laying Rex Strip Shingles in Milwaukee, Wis. Two Men Laid 14 Squares of "Strips" on a Straight Roof in Eight Hours.



Maybe the speed wouldn't be quite four or five times as fast because the longer strips could not be handled as easily as the single shingles, but the strips could be laid at least several times as fast as the shingles.

This result has been accomplished with the strip shingles shown on the roof in the illustrations. These come in strips of four or five and when laid on the roof resemble individual shingles. The shingle strips are laid four inches to the weather which allows the part of the strip, as far back as the notches extend, to be exposed. This leaves the notch in view which gives the roof the appearance of being covered with individual shingles.

"Rex" strip shingles can also be used for siding; but the makers suggest that they be placed so as to be not more than three inches to the weather when used in this way.

The Flintkote Manufacturing Company will be glad to explain more fully the economical efficiency of "Rex" strip shingles on request. They will also gladly send samples. Write their nearest office either at 90 Pearl St., Boston; 67 Beaver St., New York; or 659 Peoples Gas Bldg., Chicago.

WE want one builder in every town to handle the "HYPCO" ASEPTIC CLOSET.

The closet with the low price. The closet which has no equal, which is the most sanitary and which possesses important patented features not found in any other chemical closet.

These are the talking points which make it the most easy to sell; and the number which can be sold, plus the complete satisfaction which the closet will give, make it the most attractive selling proposition of its kind.



MADE in two styles—portable and stationary—which cover every possible requirement and meet every criticism heretofore made in regard to chemical closets.

Nation wide popularity already secured. Prominent health officials and sanitarians throughout the country greatly interested.

Sold on a binding guarantee to do the work or money refunded.

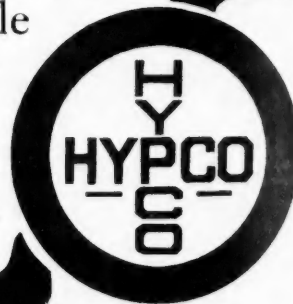
ASEPTIC CLOSETS

Suggest and install the "HYPCO" ASEPTIC CLOSET in your buildings where sewerage is not available

It will sell itself on your suggestion; and every sale means a nice profit for you, and will pave the way for many other sales in the future without any effort or loss of time on your part.

Write immediately for our proposition, and the exclusive rights to your territory.

THE HYGIENIC PROMOTION CO., Inc.
DETROIT, MICH.



Devoe Guarantee of Purity

(This guarantee already protects a million Devoe users)

Devoe Lead and Zinc Paint is put up full measure and is guaranteed to be composed of

50% Pure White Lead
(Carbonate of Lead)**50% Pure White Zinc**
(Oxide of Zinc)

Combined with the proper amount of

Pure Linseed Oil**Pure Turpentine Dryer****Pure Tinting Colors**and nothing else**Devoe Guarantee of Satisfaction**

Use Devoe according to directions, with the understanding that if you believe it faulty at the time you put it on or afterwards in the wear, we will make you satisfactory restitution.

(Signed) **DEVOE** Founded 1754

NOTE—Even Devoe will not give good results if applied during wet or frosty weather, or over old undercoating that is not in proper shape to receive a coat of new paint.



The DEVOE Guarantee Protects

The Architect
The Painter
The Dealer
The Property Owner

DEVOE

THE GUARANTEED

LEAD AND ZINC PAINT

FEWER GALLONS - WEARS LONGER

Vernosite

The Long Life Spar Varnish. Will not blister or turn white. Dries dust-free in 10 hours. Best varnish for all work exposed to weather. Recommended for woodwork on yachts, front doors, bath rooms and stables.

Marble Floor Finish

The best varnish for linoleums and floors. Preserves the natural beauty of the wood; made to resist the wear and tear that it will necessarily receive on a floor. Can be washed with soap and water.

Velour Finish

A washable, flat-finish oil paint for walls, ceilings and woodwork. Dries with a soft water-color effect. Ideal for interior work. Easy to apply, shows no brush marks, and has great covering capacity. Made in 18 attractive tints and black and white.

Holland Enamel

The best enamel made for producing perfect porcelain finish in imitation of marble. Washable and sanitary. Will not crack or turn yellow. For interior and exterior work.

Devoe Polishing Oil

A varnish restorer. Cleans and preserves all varnished surfaces. Removes dirt and does not leave a tacky surface to collect dust.

The Architect who specifies DEVOE guards his client against adulterants. "DEVOE" is just as definite as any other standard specification. The DEVOE Guarantee which insures satisfaction to the property owner, also protects the architect.

The Painter who uses DEVOE does a better job with fewer gallons. His work satisfies his customers, and satisfactory work is every painter's best advertisement. The Purity and Satisfaction guaranteed by DEVOE is as important to the painter as to the owner.

The Dealer who sells DEVOE has an unanswerable argument in the DEVOE Guarantee—DEVOE is full measure; DEVOE is free from adulterants; DEVOE requires fewer gallons and wears longer. The manufacturer stands back of him if DEVOE does not satisfy his customers. But the dealer can always be sure of Devoe.

The Property Owner who buys DEVOE is not buying unsight unseen—the formula is on every can. The DEVOE Guarantee not only gives present protection against adulterants, but it also insures future satisfaction after the paint is on.

We are the oldest manufacturing concern in the United States. Founded in New York in 1754, we have continued without interruption for 162 years.

F. W. DEVOE & C. T. RAYNOLDS CO.

New York Buffalo New Orleans Houston Boston
Savannah Pittsburgh

DEVOE & RAYNOLDS CO.

Chicago Kansas City Denver Minneapolis

Write your name and address in the margin and send it to us for DEVOE Color Cards and name of the nearest DEVOE dealer. Please say whether you are an architect, painter, dealer, or owner.



Real Satisfaction for You and Your Customers

That's the combination every contractor is looking for. It's a combination that means steady customers and big profits. It's one of the things that come along with



Morgan Doors are easy to hang. The All White Pine Core makes mortising easy; and keeps the door from shrinking and swelling with changes of weather. You don't waste time and money going back to jobs to trim and rehang doors. You're through when job is done.

Iron-Clad Guarantee

Every Morgan Door is guaranteed perfect in material and workmanship. And for your protection every Morgan Door is stamped "MORGAN" on the top rail. Look for it on the doors you install. It means money to you.

Let us tell you all about Morgan products. Send now for our free "Morgan Millwork Handbook." A postal will bring it.

If your dealer doesn't handle Morgan Doors, write us.

Morgan Sash & Door Company

Department A-23, Chicago

FACTORY: Morgan Co., Oshkosh, Wis.
Eastern Warehouse and Display:
Morgan Millwork Co., Baltimore.

DISPLAYS: 6 E. 39th St., New York,
309 Palmer Building, Detroit;
Building Exhibit, Ins. Exch., Chicago;
Bldg. Exhibit, Soo Line Bldg., Minneapolis

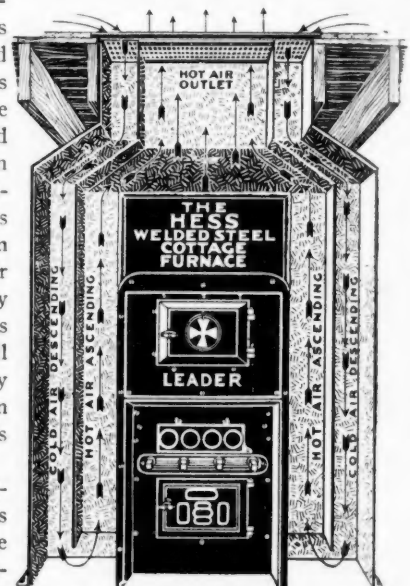
Hess Pipeless Furnace

The Hess Pipeless Furnace was placed on the market early last fall, and has received much notice from the trade, and numerous sales have been made.

It must not be understood that the pipeless furnace is adapted to all kinds of houses, but it is intended merely for cottages and bungalows, of the type in which there may be one or two large living rooms with smaller rooms opening into them.

A large register face is placed directly above the heater and the heat comes up thru the middle of this register. The two ends are connected with the sides of the furnace and the cold air flows down alongside of the furnace thru these end openings, and then returns thru the center. The whole forms a circulating system which changes the air of the rooms very rapidly and circulates it to all parts of all rooms which may open into the room where the register is placed.

Customers are reporting great success with this method, the temperature thru various rooms differing not more than two



Cross-Section of Hess Pipeless Furnace.

degree at different points. Upstairs rooms may be tempered by the use of ceiling registers, opening from the lower rooms.

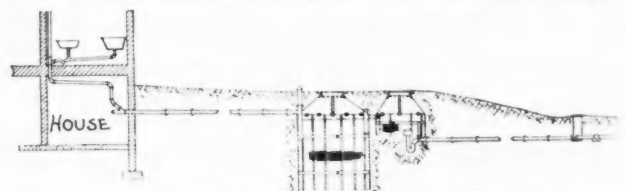
The Hess Warming & Ventilating Company, 1220 Tacoma Building, Chicago, Ill., does not discontinue the ordinary pipe furnace, but adds the pipeless heater as an alternative for small spaces which may come within its scope.

The heaters are sold on trial, insuring the buyer against disappointment. Special terms are made to contractors which enable them to handle the furnace business directly with the manufactures, rather than thru local dealers. Correspondence is solicited.



The Aten Sewage Disposal System

One of the most necessary features about an up-to-date farmhouse is a satisfactory sewage disposal system. The Aten sanitary system of sewage disposal has been particularly designed to meet the needs of the suburban and farm home. This system is very little more expensive than the antiquated and dangerous cesspool, even after making allowances for special material, and as it requires no cleaning out, no oper-



Details of Sewage Disposal System for a Farmhouse.

ating expense, it is much less expensive over a period of years.

The illustration herewith shows the method of installing the Aten system, illustrating the Aten special septic tank, and the Aten special siphon chamber, at the right of the septic tank. The sewage enters the septic tank, where the

(Continued to page 182.)



Better Lumber

C. F. Zutt, Deapolis, N. D., says:

"Was well pleased. If I hadn't needed the lumber, would have taken it to our local yard and sold it for finishing lumber, as it is just as good. What they call No. 2 is 12 knots to the square foot."

W. B. Squire, Clyde Park, Mont.,
writing October 23, 1915, says:

"I can say that I am very much pleased with the lumber."
(Follow the arrow for saving)

Oscar Indergard of Gorham, N. D.,
wrote September, 10, 1915:

"The lumber arrived here in fine shape."

Edwin C. Johnson of Donnybrook, N. D.,
wrote us November 20, 1915:

"I am more than pleased with the grade of lumber and want also to thank you for your prompt service."

Torgus Tufteskog of Horace, N. D.,
under date of November 26, 1915, wrote:

"I am very well pleased with the material. I don't know how much I saved but think about half."



At big Saving

A. Van Buren, Hazelton, Idaho, says:

"I had more than enough material. I'm satisfied I saved more than \$250 at least, besides getting a better grade of material. Several have stopped and examined the house and expressed their surprise at quality of material."

"I have not had much time to take an accurate estimate of how much I saved, but feel safe to say I saved \$100."

"We saved \$300 by sending to you for it. When we need more lumber, we will know where to go to get good lumber, cheap."

Will Sharp of Springdale, Mont.,
wrote November 5, 1915:

"For your \$19 lumber it costs \$30 here, and your \$16 lumber costs \$28 here. So you see what I saved."

K. M. Roti of Fairview, S. D.,
wrote November 15, 1915:

"I was very highly pleased with the quality of the material. Also my client was pleased. He saved \$188 on this bill."

Write H-L-F NOW

You can't beat this combination of **BETTER LUMBER—AT A BIG SAVING.** Deal direct with H-L-F the lumber producers. No middle profits for you to pay. No in-between sorting out of the lumber. Cleaner, better lumber to work with, and a better job for the customer and you.

**Order now
while there's sleighing**

Prices are lower now than they'll be later. Instead of a mean job of hauling over rough roads—that part will be all done and done easy while there's sleighing.

You'll be mighty glad that the lumber is on the spot ready for work when you're ready. For protection in case the owner hasn't shed room, we will include with shipment enough roofing to cover, **FREE OF CHARGE.**

Write H-L-F Today

Send your bills of materials for quotations at our present low figure. Price sure to advance soon. It's an easy job to haul lumber, too, when there is sleighing. For quick quotation without bill of materials, send sketch of house showing dimensions. H-L-F House Pricer, free, makes it easy to outline your plan to build.

Send 10c for the H-L-F Plan Book—4c for the H-L-F Barn Builder's Guide. Also ask for the new H-L-F Millwork Catalog. It's free. So is the H-L-F House Pricer. Send coupon today.

HEWITT-LEA-FUNCK CO.

Capital \$1,000,000

Not in any trust or combine

208 Funck Street, Sumner, Wash.

HEWITT-LEA-FUNCK CO.,
208 Funck Street, Sumner, Wash.

Gentlemen: Please send the following—

☐ Delivered, freight-paid price on enclosed list of materials (no charge)
☐ H-L-F Prize Plan Book (10c) ☐ Barn Builder's Guide (4c)
☐ H-L-F Millwork Catalog (new edition) free
☐ H-L-F House Pricer

Name.....

Street or R. F. D. No.....

Post office..... State.....

Business.....

solid matter is decomposed by anaerobic bacterial action into fluid form. No chemicals whatever are used. The overflow from the septic tank enters the siphon chamber, from whence it flows through the diverting chamber into the tile field.

Any contractor or builder, with unskilled labor, can easily install this system, largely from material locally obtainable. Its first cost is the last and only cost. The installation of this system is very profitable and satisfactory for contractors and builders. Further particulars and literature can be obtained by addressing Aten Sewage Disposal Company, 280 Fifth Ave., New York City, N. Y.



A Special Granary Ventilator and Cupola

A ventilator that is used on a granary must do several things besides merely ventilate the building. If a stationary elevator is used, the cupola can be utilized to hold the head-piece and thus the ventilator serves the purpose of a specially built cupola.

The cupola is made square and is of the louvre type. In case an outside elevator is to be used, one side of the cupola is made removable. It is held on by hooks on the inside so that the appearance from the outside is the same all around. A screen is placed inside so that the birds cannot cause any trouble.

The "Gale" ventilator is made of heavy galvanized steel and will add to the appearance of any building, as can be seen from the illustration



The "Gale" Louvred Ventilator.

This line of ventilators, made by the Galesburg Sheet Metal Works, Galesburg, Ill., are in various styles to suit all kinds of individual ideas.

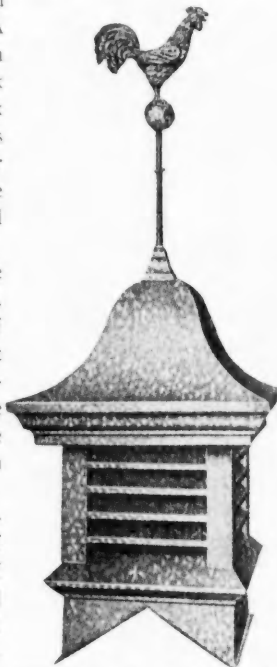


The Willis Louvred Ventilator and Cupola

Ventilators are put on a barn or other farm building for two purposes: They maintain a good air supply and they also dress up the building and add considerably to its appearance. A sheet iron cupola, such as is shown here, makes any building look much better. The only woodwork that is necessary are 2 by 4 posts that are secured in each corner to support the cupola and brace it so that it will be solid and strong in case of storms.

This cupola is made by the Willis Mfg. Co., Galesburg, Ill. It is made storm and bird proof so that it will render the best possible service under all conditions. The Willis cupola is made in all styles and prices so that the buyer can get one that suits him in design as well as price.

The Willis Manufacturing Company make a complete line of sheet metal building specialties of all kinds which are described and shown in their large catalog. A copy of this book makes a valuable reference book when any kind of sheet metal goods are being considered. Further details can be secured from the company.



Willis Cupola Ready to be Placed on a Building.



J-M Products are not only the result of experience and expert workmanship on materials of the highest grade, but have behind them the backing of J-M Service and Responsibility. They must give absolute satisfaction in service.

J-M Transite Asbestos Shingles —practically indestructible

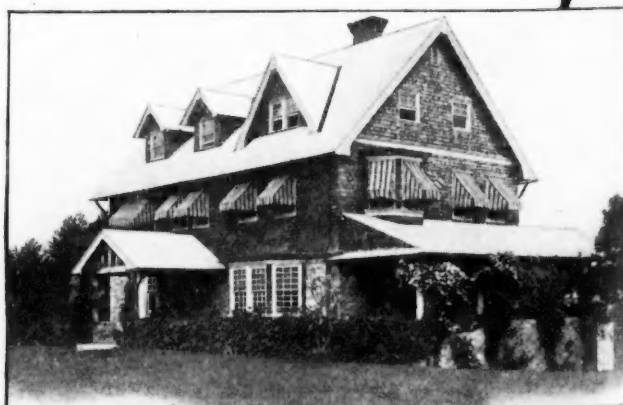
Why? Because they are made of nothing but Asbestos Fibre and Portland Cement—a combination of materials that renders them practically indestructible. Age and exposure to weather actually **toughens** their composition and even **fire** cannot destroy them.

Made in attractive Gray, Indian Red and Brown. The gray may be stained any color to harmonize with any artistic scheme.

J-M Transite Asbestos Shingles are tested, approved and labeled by the Underwriters' Laboratories under the direction of the National Board of Fire Underwriters.

H. W. Johns-Manville Co.

New York, Milwaukee, Cleveland, Detroit, Philadelphia, Pittsburgh, St. Louis, San Francisco, Chicago



Residence of D. T. Dickson, Wayne, Pa.
Covered with J-M Transite Asbestos Shingles.
Francis A. Gugert, Architect, Wayne, Pa.



SHOPS
TRIMMED
WITH

STOCK

TERRA

MIDLAND
TERRA COTTA
COMPANY
CHICAGO, ILLINOIS

COTTA

WILL ATTRACT
CUSTOMERS



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

¶ White enamel stock terra cotta—similar to that used on these buildings, can be had for immediate delivery.

¶ Send in your plans for ideas and estimate.



Real Paint Tests

WINTER cold and Summer heat are real tests of paint. Hot days expand the lumber and stretch the paint to the limit while cold contracts both.

Even cheap paint looks good in the pot, and often on the house for a while, but only pure paint can withstand for long the strain of stretching and contracting constantly with the wood. Low priced paints made of lifeless inerts or hard, brittle pigments crack and scale.

Pure Carter White Lead and pure linseed oil makes pure paint, white or any color, that is as elastic as any lumber; it anchors deeply in the pores and the movements of the wood cannot possibly cause it to scale. With this pure paint the expense of burning and scraping off scaling paint need never be borne.

Your supply of Carter can be had as promptly from your dealer as anything else you may be using. We have warehouses everywhere.

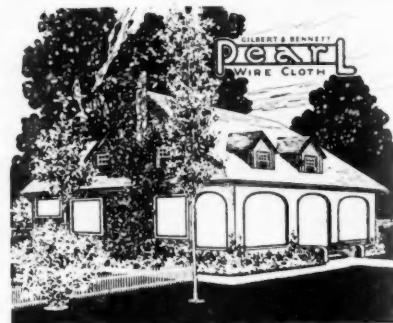
If you have not received the Carter Paint Calculator you ought to ask for a copy. Sent to Contractors with our compliments.

Carter White Lead Co.
West Pullman Station "B", Chicago, Ill.

The Screen with the "Invisible Gray" Color

The greatest cause of the deterioration of screens is rust. Some people have the idea that the screen wears out, but there is really very little wear on screens, and the only reason they do not last longer is because the rust eats thru the wire strands forming the screen. There are several methods of protecting the screen. One is by painting, which is temporary. Another way is by giving the wire a metallic coat that is proof against the rust. This type of protection lasts indefinitely.

"Pearl" wire cloth is made in this latter way. As an example of its lasting qualities, the makers say that they have instances on record in which their screen has been in use for fifteen years. It is made of a hard, strong, steel wire that is covered with a weather-proof metallic coating. The process of coating is a secret one. The process leaves all the openings in the screen clear so that there is no place to catch the dust.



You Can See Out But Not Into a House Equipped with "Pearl" Screens.

The light, handsome color of the screens is very enduring and changes on exposure to an invisible gray color. The screen does not have to be painted each year and the meshes are always open so as to interfere very little with the vision of those on the inside of the house. With light conditions as they usually are, the gray color prevents anyone from seeing into the house from the outside.

"Pearl" wire cloth is a product of the Gilbert & Bennett Manufacturing Company. More complete details of their products can be obtained by writing to Department A, 277 Broadway, New York, or 38 S. Dearborn Street, Chicago. Now is the time to be making up screens for the summer, so get all the information you can.



How My Motor Truck Helps My Business

Editor AMERICAN CARPENTER AND BUILDER, Chicago.

Just received the electros I ordered from you of me and my "I. H. C. Truck," Model F. Am sending you check in payment by return mail. Why more country contractors don't use trucks is more than I guess now.

I am a building contractor in a small town, and after many years of close application to my work, I have come to the conclusion that it is not so much the cost of material and labor that determines the percentage of profit I make on a job as it is the way in which the job is handled.

For instance, I have to build a barn for my friend, Farmer Jones, who lives out on the North Road about five miles, and all of my workmen live in town. I can't very well hire automobiles to take them to and from their work, and transportation must be provided, so I just pile them on my Model F, "I. H. C." auto truck and have them out on the job at starting time. The expense attached is almost nothing. Say, for the round trip, fifty cents, and the knowledge that they are all there and the job isn't held up more than pays me.

How many times have several of my men been idle awaiting deliveries of building material, and three men idle for even one hour at 60 cents per hour each, costs me \$1.80. It was just such occasions as this that showed that an auto truck of sufficient capacity to carry a good sized load of

(Continued to page 186.)

Crown Your
Buildings with

VULCANITE

Ornamental
Roofing and
Shingles



A Most Pleasing
Variety of Effects Obtainable in Colors and Designs

SAFETY AND BEAUTY

Heretofore, safety has been secured by the wealthy by using slate and tile roofs. The man of moderate means had to take chances and has repeatedly seen all he possessed destroyed by a flying spark or a fire brand.

Temporary color effects have only been possible by the use of stains and paints, but these did not withstand sun and rain for any length of time.

It has remained for the Patent Vulcanite Roofing Co. to give the public a roofing material that perfectly combines the qualities of safety, comfort and beauty at so low an initial cost, that no one now needs to put over his home such a flimsy, highly combustible and temporary covering as a wood shingle roof.

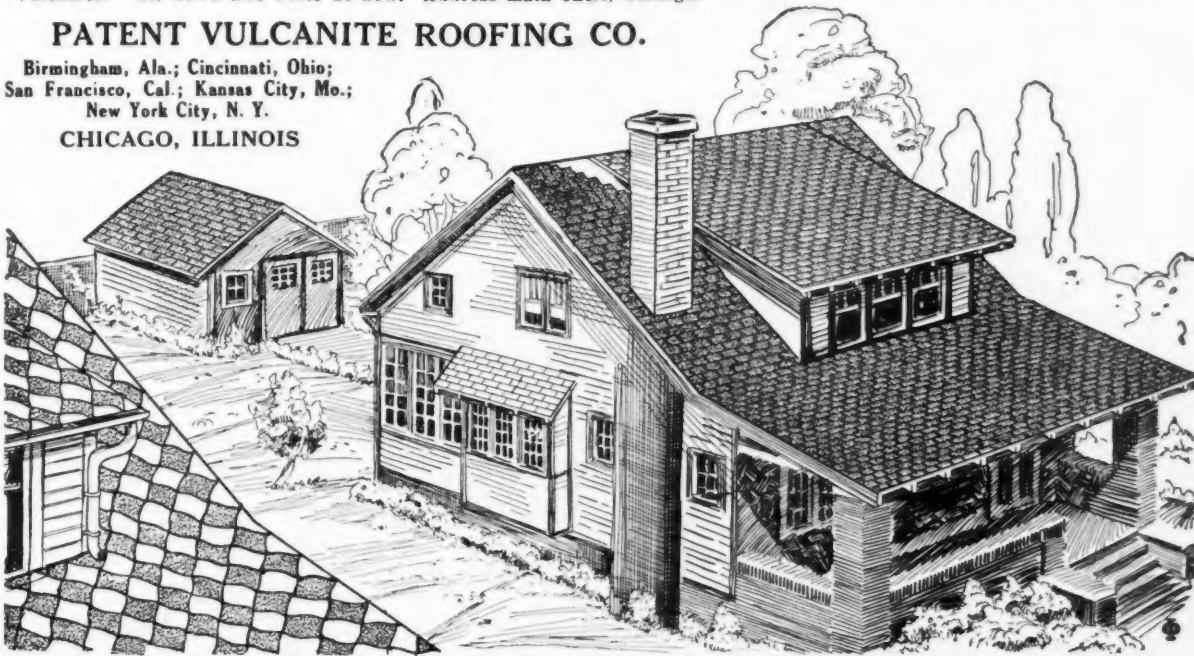
Vulcanite Roofings are an unfailing weather-proof and fire-resisting material. Twenty years' service is a reasonable expectancy. Vulcanite comes in rolls and shingles in several patterns that can be worked into a large variety of truly artistic effects.

We shall be very glad to send you our large illustrated catalogue which will show you some of our popular roofings and how they add to the appearance of a building. We'll also tell you just what we do for Builders to help them lay more "Vulcanite." Sit down and write us now. Address main office, Chicago.

PATENT VULCANITE ROOFING CO.

Birmingham, Ala.; Cincinnati, Ohio;
San Francisco, Cal.; Kansas City, Mo.;
New York City, N. Y.

CHICAGO, ILLINOIS



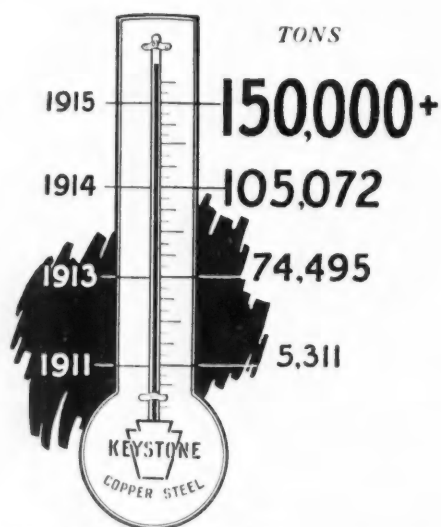


The Model F, "I. H. C." Truck Gets the Men and Material to Work on Time. It Makes it Possible for the Contractor to Handle Jobs Over a Wide Territory.

building material—or men—to or from the job was practically a necessity, for even a small town builder. My truck has saved me hundreds of dollars each year over its cost and maintenance. My dray bills are practically wiped out and my tools and equipment are on the job when needed. My building material dealer is as obliging as a man could possibly

be, but if his teams are all out, he has to await their return before he can deliver me a few sacks of cement that are lacking. I can drive down to his yard, load up and be back on the job in very short order. I have also found that I can often buy cheaper by making my own deliveries.

(Continued to page 188.)



Send for our interesting booklet—
"Keystone Copper Steel—A Discussion on Corrosion"

We manufacture a complete line of Sheet and Tin Mill Products of every description and for every known purpose. Write us for full information on Black and Galvanized Sheets, Corrugated and Formed Roofing Products, Special Sheets, Roofing Tin, Bright Tin Plates, Etc.

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

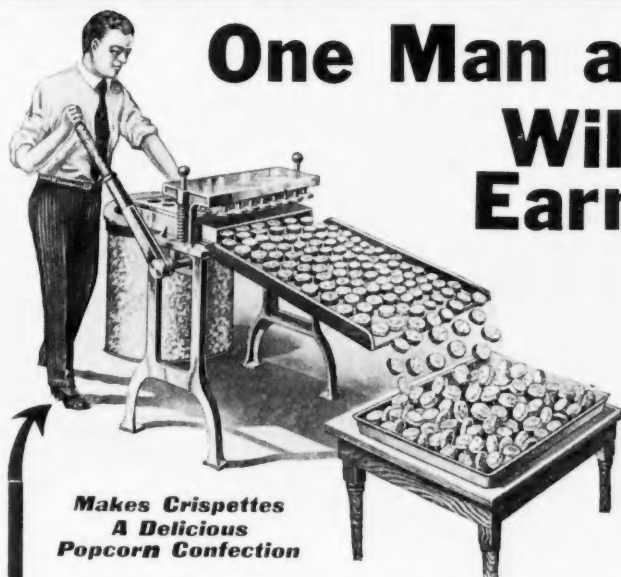
DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle

The Thermometer of Production is Rising Steadily—

Keystone Copper Steel
SHEETS AND TERNE PLATES
have received heartiest approval from
consumers. The constantly increasing
consumption of KEYSTONE Products is
in itself sufficient proof of superiority.

CARPENTERS! ←



One Man and This Machine
Will Earn **\$50 to \$100**
Daily Profit

Not a dream — not a myth, but an actual reality. That's the amount you can make with one machine in the Crispette business. **You can start most anywhere. In any town over 500 population.** Somewhere near you there is a vacant store, a part of a building, a window or side-walk stand, where the rent is low. There you can set up a Crispette machine. Make and sell Crispettes and grasp opportunity and fortune.

Take the Right Step—Investigate Today

Are you satisfied to go on just earning a bare living? Are you waiting, dreaming and doubting? Is the work you are doing or the business you are in making anything more than a mere living for you? You can change all this. You can become a force that meets the world on its own basis. You can get your share of fortune in a dignified, profitable, honorable business. **All you need is one machine.** Take part of the money you have saved up against the day of opportunity. Invest it in a Long Crispette Machine and go into a business that will net you \$2,000 to \$7,000 a year. Stop waiting for something better to turn up. **Stop the idle days with nothing to do.** Get into a business that will pay you big money—that has no dull seasons. The coupon below can be your first step to financial independence. Mail it today.

AMAZING RECORDS

\$1500.00 in One Month. Eakins paid his last \$10 for rent of a store window. At the end of 30 days with a Long Crispette Machine he had \$1500 clear profit in the bank.

\$7179.12 Made Last Year. C. B. Kunkle of Michigan did it last year from an open candy stand. Got his start from answering just such an ad as this and accepted the opportunity it gave him.

\$525.00 in 27 Days. Thompson, of Oregon, made this amount with the Long Crispette Machine. Has done a big business ever since.

YOU CAN DO THE SAME

There is just as much chance for you as for these men above mentioned. If you doubt it I will send you proof when you write for my book. Follow the **cut** no longer. **Accept no more what others care to give. Get on the other side of the fence and take what you want.**

I'll Help You Start in the Business that's Making These Men Rich

LISTEN! I'll help you to follow in Mr. Eakin's footsteps. I'll help you to do as Kunkle did. I'll help you to quit earning just a bare living, if you will do as I say. **Long Crispettes are a new delicious confection.** They sell at 5c a package. **Made by a secret formula in a patented efficient machine** like you see in the picture above.

Experience Absolutely Unnecessary

The start is the thing. The Long Crispette Machine and Long's secret formula will do the rest — will plant your feet on the highway of fortune — will make money for you from the start. Others are doing it and so can you if you will only make up your mind to act. **Fortunes have been made in 5c pieces**—street cars, moving picture shows, chewing gum, 5c and 10c stores. Everyone will spend a nickel. **Everyone likes Crispettes**—Children. Parents. Old Folks. You can start anywhere—in a window, small store room or the kitchen of your own home. **Big book "Dollars and Sense" tells you how.**

Every Nickel You Take In Means Almost 4c Profit

Every 20c you spend for supplies to make Crispettes, brings you almost \$1.00. That's one of the reasons why you build a fortune so fast. There is no guess-work about it, but it's the actual bona fide, proven record of profits of Crispette producers from Coney Island to Oregon — from Canada to South America. The world hungers today for something different from anything ever put out in your town. Crispettes are different from anything ever put out in your town. There is a delicious aroma from Crispette manufacturing that actually makes the mouth water — that sells the goods and you reap the golden harvest.

Come to Springfield at My Expense

Up to a distance of 300 miles I'll pay your expenses if you buy a machine. Let me prove every word in this advertisement. No greater, better opportunity can be put up to you offering such certainty of success, producing the enormous, honest, legitimate profits, requiring such small investment, so light running expenses. **Any man of ordinary intelligence, ambitious, progressive, energetic, who wants to get ahead in the world should make a Crispette Machine pay for itself in a few weeks.**

Mail Free Coupon—for Valuable Book

Hesitate no longer. Act now while the opportunity is before you. Simply sign your name and address to the coupon and mail it at once. **Send no money. My new book "Dollars and Sense in the Crispette Business" is FREE to every ambitious man who wants to better his condition in life**—who is tired of working for others—whose business is earning merely a bare living. **"Dollars and Sense"** tells the whole story—how and where to start—how success is assured. Gives experiences of others. It's a book of inspiration—a valuable guide to success and wealth. Send for it today.

**W. Z. LONG COMPANY 1132 HIGH STREET
SPRINGFIELD, OHIO**

FREE COUPON

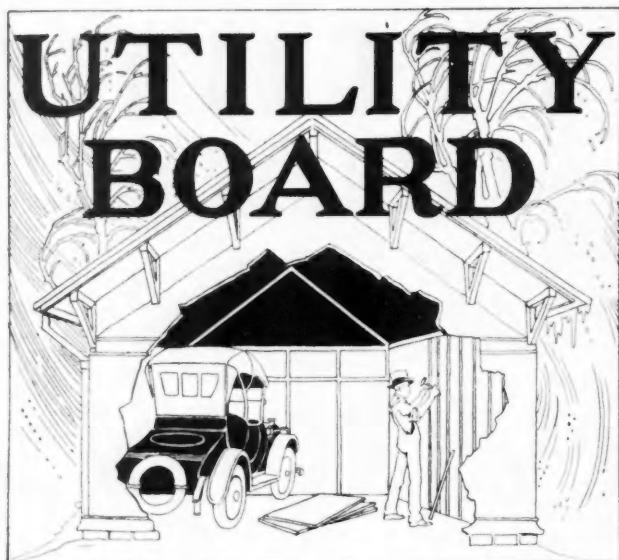
W. Z. LONG COMPANY,
1132 High Street,
Springfield, Ohio.

Gentlemen:—

I want to investigate the opportunity for me in the Crispette business. Please send me your free book, "Dollars and Sense," without any obligation and without cost.

Name

Address



Makes Barns and Garages Warm and Weatherproof

Utility Board on the walls means dry, warm barns and outbuildings. It's inexpensive, but certain protection against cold and damp, against vermin and dust.

Between each layer of Utility Board is a binding layer of asphalt—a high-quality, tested asphalt that positively assures a water-proof, weather-proof wall-lining. Utility Board stands up splendidly—won't warp, wilt or pry loose. It neutralizes the outside temperature—keeps buildings warm and air-tight in winter, cool in summer.

Be Sure You Specify the Original
UTILITY BOARD
Made by the Heppes Company

Write today for liberal free samples, interesting descriptive literature and full details about Utility Board. Let us also tell you about our new grained wood finishes for residences and offices.

THE HEPPE'S COMPANY

4503 Fillmore Street, Chicago, Illinois

Flex-A-Tile Asphalt Shingles No-Tar Asphalt Paint
Flex-A-Tile Roll Roofing
Other Guaranteed Heppes Products

It is only a very short slip between profit and loss, and the motor truck saves so many steps that the margin of profit is increased amazingly.

My Model F, "I. H. C." truck is a little wonder. I hitch it in front of my mixer and haul it to the job. Its capacity is one ton, but it carries more. Its upkeep cost is very low. In fact, it costs much less per day than a day laborer, but lets me do two days' work in one. It is as near fool-proof as machinery can be made. It handles very easily and when it isn't working (which isn't very often, by the way), it isn't eating its head off. It gives to me, a builder, a certain prestige that my old horse, Ned, never could, and best of all, it lets me get to all of my various jobs at least twice each day, and see that they are kept supplied with building material, etc.

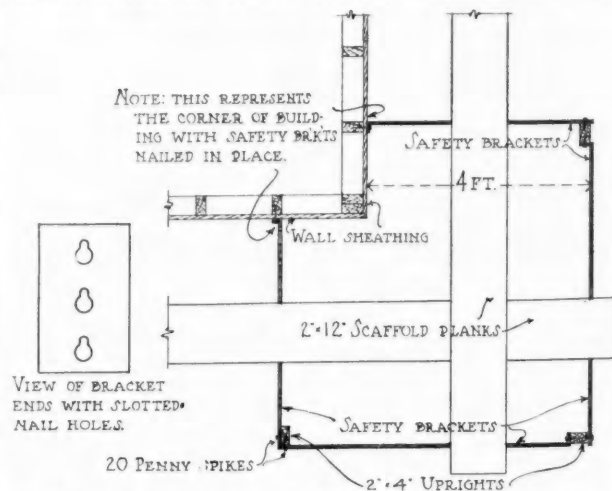
My Model F has been a money maker for me every day since I've had it. (Name withheld by request.)



Strong Scaffold Bracket Covers Small Building Space

The most necessary features of a scaffold bracket are its strength and dependability. After these points are satisfied, the most important feature is the amount of building surface that is covered. The less space covered, the more convenient the bracket is to the man who is engaged in construction work of any kind. This is especially true of stucco work.

The bracket shown here fits these conditions in very good style and is also small and easily handled. It consists of a 2-inch iron channel one end bent at 90 degree angle and the other left flat. The bars can then be fastened to the studding on sheathing of the building and to the uprights on the scaffold that are built in the usual way. Three holes of special shape as illustrated are provided in each end. The bars can thus be placed directly over the nail heads and bushed down so that the nail slides

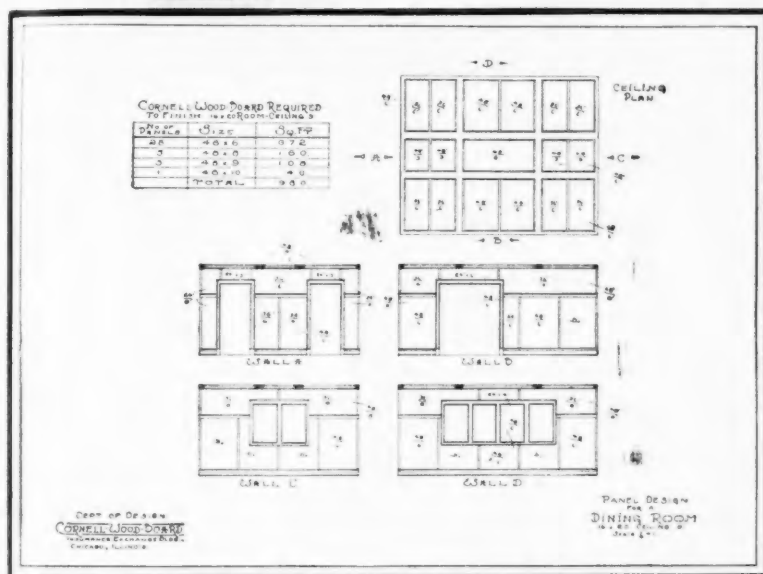


Plan View of Scaffold at Corner Built on Special Safety Brackets.

into the slot. The heads of the nails prevent the bar from sliding away from the studding or the scaffold uprights and their own weight and the weight of the boards and the men on them hold them down in position. They can, of course, be easily removed by lifting them up so that they can be pulled off the nails thru the larger holes.

The method of placing the brackets at the corner of a building is shown clearly in the detail, which also shows the construction of the bracket.

This bracket is being made by the Safety Bracket Company, Thief River Falls, Minn. Complete particulars concerning this bracket can be obtained from this firm.

FREE**Plans & Specifications****Made Complete
At Your Request**

These Free Plans are Real Plans, complete in every detail. They will show you a beautiful paneled interior of the job in which you are interested — using Cornell-Wood-Board for the walls, ceilings or partitions.

All you have to do is send us the rough dimension sketches. An architect who specializes in beautiful interiors will draw up the complete plans and specifications bill of material and estimate of material cost—*without one cent's cost to you.*

You are placed under no obligation whatever. This free offer is our method of demonstrating to you the possibilities of Cornell-Wood-Board in home building.

**Cornell-Wood-Board FOR WALLS, CEILINGS
AND PARTITIONS****GUARANTEED NOT TO WARP, BUCKLE, CHIP, CRACK OR FALL****MODERNIZES FARM BUILDINGS**

Cornell-Wood-Board has a score of uses on the farm. Just as good for the chicken house, summer kitchen, buggy shed, barn, smoke house, or any other building as it is for the home. Makes everything weather-proof.

Cornell-Wood-Board nails right to the studding or over old walls. It can be applied in any weather and is not affected by atmospheric changes. Makes rooms warmer in winter, cooler in summer. It is thoroughly sized and takes paint or kalsomine perfectly. The cost of material and application is comparatively small.

FILL IN THE COUPON

Send us the blueprints or sketches of the job you have in mind and let us give you the plans.

Cornell Wood Products Co.**C. O. FRISBIE, President****107 Insurance Exchange Building****CHICAGO, U. S. A.****MAIL
This Coupon****Cornell Wood Products Company****107 Insurance Exchange Building****Chicago, U. S. A.**

Gentlemen:—As per your offer, please send **Complete Plans and Specifications, Bill of Material, and Estimated Cost of Job**—using the enclosed blue prints or sketches as a basis. Also send free sample of Cornell Wood Board.

We understand that this **Service is Absolutely FREE** to us—**No Charge or Obligation Whatever.**

Name

Address

"Red Rib" Hangers and Track

For a door hanger to be successful the track must be just as strong as the hanger because no hanger will operate very

well in a track that is sagging in spots or that can bend under the weight of the door.

"Red Rib" tracks are made very strong to stand the continual wear and tear of the hangers passing over them. The bracket that holds the track in position is put up in two parts and is arranged so that the track will be properly aligned when it is in place.

The back half of the bracket is placed on the barn or other building first and is carefully aligned without having to bother with the track itself. The track is then placed on this part of the bracket and the other half is placed over it and fastened in position by heavy lag screws. The track is completely enclosed so as to be weather, rain and bird proof.

The hangers are of the tandem type and have a double grooved wheel at each end of the tandem. The makers say that this will prevent the track from spreading. The wheels are all equipped with roller bearings.

This "Red Rib" door track and hanger have been devised and perfected by the Safety Door Hanger Co., Ashland, O., who will be pleased to send further details and particulars on request.



A Chemical Closet Which is Different

Heretofore chemical closets have been divided into two principal classes—those with a removable pail or other receptacle which must be carried out and dumped, and those with a large storage tank under the building from which the contents must be pumped or baled at certain

(Continued to page 192.)



Cut-away View of "Red Rib" Adjustable Hanger on Door.

Consider Your Reputation

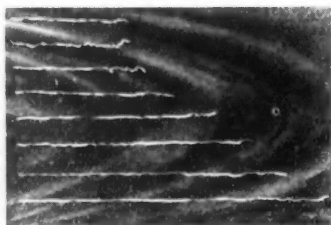
No carpenter or contractor can afford to recommend or use *cheap* wall board. He has his reputation to consider. And cheap wall board is just another name for *unsatisfactory* wall board—with its inevitable "come-back." Bad business!

Play safe. Get *permanent* profit and trade, with

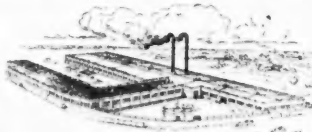


UPSON-BOARD

It's lumber—made synthetically. Looks, feels and works like regular lumber. Not one complaint to the million feet!



Shavings—up to 4 feet long—planed from ordinary piece of Upson Board—artificial lumber. Looks, feels and works like regular lumber.



The Most Completely Equipped Wall Board Plant in America

too; the soft board draws around the nail heads. Upson Board saws, cuts and nails exactly like a piece of lumber.

Bank on this: **DEPENDABLE** Wall Board is going to be the wall and ceiling lining of the future. People *expect* plaster to crack, chip and fall—it isn't the ideal lining, by any means. Neither are some wall boards.

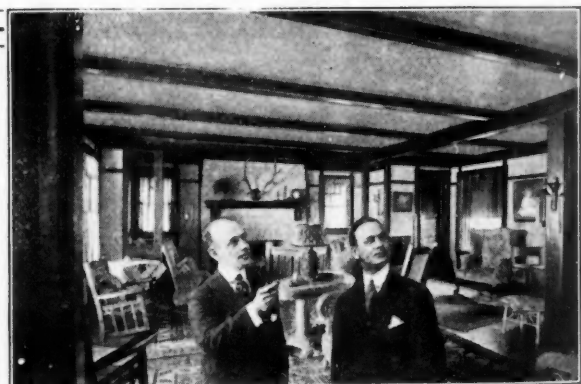
But Upson Processed Board is made good to make good—in every kind of building—under every condition—everywhere. It is made only of long, pure, wiry wood fibres, combined under the Upson formula. It is **SCIENTIFICALLY PROCESSED**; kiln-cured like interior trim; really water-proofed; surface-filled.

There isn't a dollar's difference, for the ordinary room, between Upson Board and the cheapest, most unsatisfactory board, and the Upson Board saves \$5 to \$15 on the painting. Tell this to your customers.

Try **DEPENDABLE** Upson Processed Board for yourself! Write us today for Upson Board sample—give it any test you want—and you'll see why it's the Board for **your** business. We want to tell you, too, about our practical plan to help boost the trade.

UPSON CO. *Fibre Board Authorities* **21 Upson Point, Lockport, N. Y.**

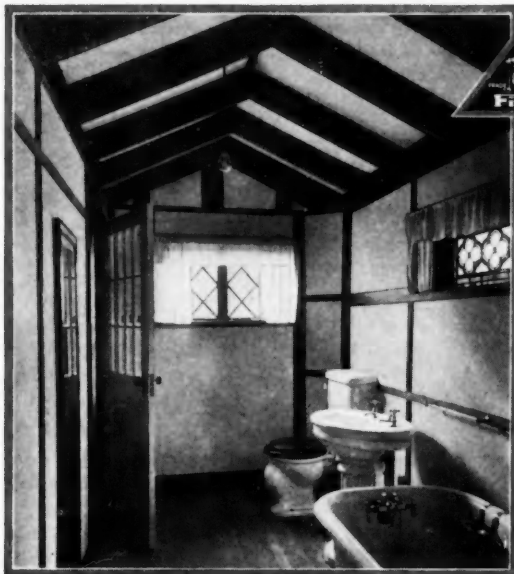
LOOK FOR THE BLUE CENTER



Upsonized Walls and Ceilings—Easiest Lining to Install—the Most Satisfactory

"We can apply 25% more of Upson Board than of any other board," carpenters write. It is stiffer, more easily cut, more easily handled. It cuts with a clean edge, when a fine tooth saw is used. Whereas board put together with tar or asphaltum, gum the saw and soil the hands; and, when applied, are apt to sag with ordinary room heat.

Some boards are so soft and punky that they're almost sure to rip and tear under the saw. They're hard to nail, but the soft board draws around the nail heads. Upson Board saws, cuts and nails exactly like a piece of lumber.



Send for sample of **Fiberlic** and prove our claims. Also ask about the special **Fiberlic** paints and stains that come in 24 different colors and shades.

For Walls and Ceilings

Fiberlic

Made This Effect Possible

THE bathroom illustrated opposite is an example of what can be done with **Fiberlic** for distinctive effects in sanitation. This room was finished with white enameled **Fiberlic**. After being applied it was treated with white enamel.

The builder who specified wall board for this construction selected **Fiberlic** because he required a wall board that would be absolutely sanitary and vermin-proof. **Fiberlic** reaches the 100 per cent mark of perfection in these and all other essentials.

This superiority is due solely to the exclusive patented chemical treatment that impregnates every fibre.

Fiberlic answered the call and proved more economical than lath or plaster because it is nailed right to the studding. It is also more serviceable than tile.

Fiberlic has superior strength, durability and rigidity. It is odorless, fire-resisting, sound-deadening and thoroughly sized throughout.

You can safely specify **Fiberlic** for any kind of room in any kind of building.

THE FIBERLIC COMPANY

London (England) Branch: MacAndrews & Forbes, Ltd., Finsbury, Court, E. C.

:::

:::

Camden, N. J.

BEAVER BOARD WITH BEAVER BOARD

Don't be misled into thinking that any wall board is Beaver Board or as good as Beaver Board.

When you order a Maydole hammer or a Simonds saw, you expect to get a hammer made by Maydole and bearing the name of Maydole or a saw made by Simonds.

It's the same way with Beaver Board. Real Beaver Board has the Beaver trade-mark on the back of every panel and is made by The Beaver Board Companies.

There's enough difference between Beaver Board and other wall boards to make it worth your while to be sure you get the original.

Genuine Beaver Board is patented—no one else can make a wall board just like it. To avoid disappointment, look for the Beaver trade-mark on the back of every panel.

THE BEAVER BOARD COMPANIES
560 Beaver Road Buffalo, N. Y.

Branches in Boston, New York, Philadelphia, Baltimore, Cleveland, Detroit, Indianapolis, Chicago, Minneapolis, Omaha, Kansas City, San Francisco, Los Angeles.

If it hasn't
this trade-
mark it isn't
Beaver Board



Write for free
illustrated
booklet



These are the Only Tools Required

A pair of hands, a claw hammer and some nails complete the equipment needed to finish the interior of any house from cellar to attic. Make it more beautiful, more sanitary, more uniform in temperature than a plastered house by using

CAREY
Ceil-Board
SUPERSEDES PLASTER FOR
WALLS
AND CEILINGS

Contrast with this the old method which requires special crews of lathers and plasterers, tons of sand and lime, sacks of cow hair, cumbersome scaffolding and days or weeks of precious time.

Carey Ceil-Board is made in plain finish for papering or painting and in natural grains of hardwoods for wainscoting and paneling effects.

Write today for samples and for our handsomely illustrated booklet.

The Philip Carey Company

1021 Wayne Ave., Lockland, Cincinnati, Ohio



Ceresit Insures Permanence Here



In Grant Park, Chicago's famous Lake Front, almost a mile of concrete balustrade, colonnades pylons and fountains are waterproofed by mixing CERESIT Waterproofing Compound in all the concrete used for facing or moulded work on this mammoth job.

The necessity of using a dependable water-proofer in all concrete, cement and stucco work, even when not subject to hydrostatic pressure as in the above instance, is now conceded by thoughtful contractors and builders who strive to attain PERMANENCY in all their work.

If water enters the pores of concrete, cement or stucco and the latter be subjected to freezing, then spalling, cracking and deterioration are inevitable. Ceresit, used in cement mortar coating or mixed in the concrete mass, effectively seals the pores, thus preventing the entrance of water or absorption of dampness. The resultant water-resisting surface will not discolor and is cleansed by rain.

Try CERESIT Waterproofing Compound on your next stucco job—your client is sure to be delighted with the results.

BE SURE TO VISIT OUR BOOTH

At the Chicago Cement Show and let us show you all of the C. W. Co. Products. Consult our experts about your waterproofing problems and ask for our new specification book containing full data on all waterproofing and damp-proofing work.

Ceresit Waterproofing Co.

910 Westminster Bldg., Chicago

intervals. The latter class appeals to very many people who object to the labor entailed in the carrying out and dumping of a pail, but the initial cost, and the expense of installation and maintenance have placed them out of the reach of the average house owner. Without changing the general construction of their "Hypco" Aseptic Closet, which is familiar to most of our readers and featured elsewhere in these pages, the Hygienic Promotion Co., of Detroit, Mich., has recently developed a closet which can be purchased at a very low price, and which accomplishes what has not heretofore been done—the final disposal of the contents of the closet into the ground by the mere raising of a rod attached to a special outlet attachment.



"Hypco" Aseptic Closet.

The two closets are interchangeable, *i. e.*, anyone who purchases one of either type may convert it into the other type, at a nominal cost, by change in the container. This new closet can be installed on any floor and in any part of a building by anyone handy with the most simple tools; its simplicity eliminates the possibility of trouble or expense.

It has already proved very popular, and the makers feel warranted in making the claim that it will be the winning chemical closet of the future. It will be worth the while of those who are interested in a chemical closet to get acquainted with its many excellent features. Write the Hygienic Promotion Co., Detroit, Mich., now, for full particulars.



"Sanitor" Chemical Closets

The use of chemical closets is becoming greater and greater as they are being recommended by Boards of Health and Government experts. They are especially applicable to districts that are not equipped with sewerage systems.

The type shown here is adapted to large installations in homes with large families, schools, etc. It has a large capacity and is very easily emptied by means of the special pump dispatcher and portable emptying container. The makers of this closet say that this process of emptying is very simple and that the tank can be emptied by any one with no inconvenience at all.

The disinfectant used is said to be ten times as strong as pure carbolic acid crystals, but it will not burn the flesh or corrode metal. The chemical thoroly disintegrates and disinfects the closet and the makers say that the closet is completely odorless.

A great many building contractors are making good use of their spare time by installing the "Sanitor" closet. It is made by the West Disinfecting Co., 12 E. 42nd St., New York City, N. Y. They have some good territory still open and will be glad to furnish further information to our readers.



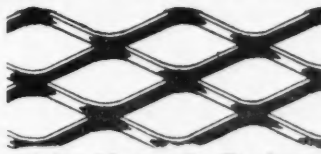
"Sanitor" Chemical Closet.

Contractors Using Berger Materials are "Making Good" and Making Money



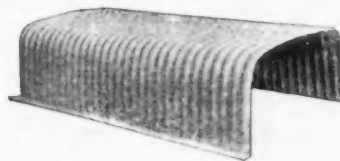
No Supports for Short Spans

Berger's Ferro-Lithic Reinforcing Plates are used extensively for reinforcing and centering concrete slabs for flat or arched roofs and floors, sidings of buildings, sidewalks, etc. Made of a series of dovetailed members running full length of the sheet, which stiffen the plate and furnish a key for bonding the concrete and plaster.



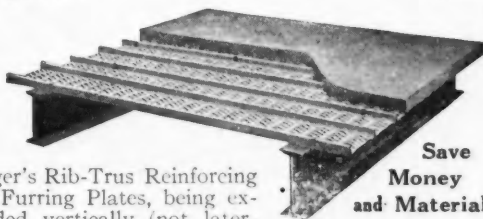
Makes Plaster Go Farthest

Berger's Expanded Metal Lath. A minimum quantity of plaster will go farthest and make a practical job on stucco walls, partitions, ceilings, and every other kind of work requiring plaster. The diamond shaped openings are small and expanded so that the plaster clinches perfectly. Standard sheets are 18" wide by 96" long.



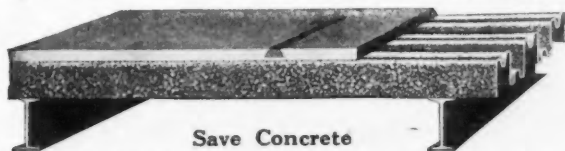
Reduce Cost and Dead Load

Berger's Pressed Steel Cores will enable you to do this in both light and heavy long-span construction. Our standard size has a 20-inch base with flanges adapted for making concrete joists 24" on centers. Ceilings can be erected after all wires and pipes are placed. We make both Permanent and Removable Cores.



Save Money and Material

Berger's Rib-Truss Reinforcing and Furring Plates, being expanded vertically (not laterally) are especially serviceable for reinforcing thin concrete slabs for roofs, floors, sidewalls and partitions. Ribs running throughout each sheet on 6-inch centers stiffen the plate and support it while the soft concrete is being poured.



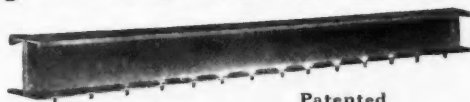
Save Concrete

Berger's Multiplex Steel Plates save concrete and minimize dead load in heavy service floor, roof, bridge and sidewalk construction. Easily installed with unskilled labor. Particularly desirable where no plaster ceilings are wanted or required, or where the underside cannot be readily plastered. Sixteen to 24 gauge sheet metal; lengths up to 10 feet.

See Sweet's, pages 210 and 220-224.

Write for Hand Book F. A, covering Metal Building Materials.

Use Berger's Metal Lumber Instead of Wood



Patented

The reasons are obvious. It is stronger and more durable, and officially proven to be fireproof and indestructible. It is also sound-proof, damp-proof and vermin-proof. Not affected by climatic changes and can be installed in winter just as well as in summer.

We cut and number each unit to fit your plans—you put them together on the job, thus making erection easy and saving considerable money in time and labor. Use Berger's Metal Lumber for safety, economy, permanence and satisfaction. See Sweet's, pages 278-285, also write for Catalog L. A. B.



Residence of Mrs. Morris Belknap, Louisville, Ky.
Architects: J. B. Hutchings & Son.
Berger's Metal Lumber Used Throughout.

The Berger Mfg. Co., Canton, Ohio

Branches: Boston New York Philadelphia Chicago St. Louis Minneapolis San Francisco
Export Dept.: Berger Building, New York City, U. S. A.



EVERY HOME YOU BUILD

is a prospect for GLOBE FENCING, either for front, rear or division purposes. Why not include fencing in your contract?

GLOBE FENCING

harmonizes with any style of house, is strong and serviceable, easy to erect, on any style of post, on uneven ground—and no repairs.

Encourages sanitary conditions.

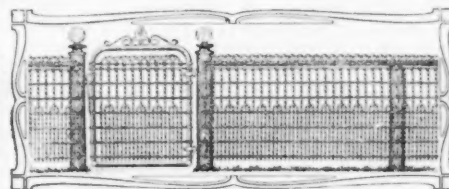
These are strong features that will enable you to secure orders.

GLOBE FENCING is cheaper and easier to erect than board fencing and is much more attractive.

We have constructions adaptable for every purpose—all A-1 goods.

Get this business yourself and pocket the profit. You can soon develop a large and profitable fence construction business.

Catalog and special discounts to contractors sent on request.



GLOBE FENCE COMPANY, NORTH CHICAGO, ILL.

Fitting Up a Booth with Neponset Wall Board

The half tone shown below has been submitted by Bird & Son, of East Walpole, Mass., manufacturers of Neponset Wall Board and other Neponset products, as an indication of what can be done with their wall board in making an exhibition booth. The rooms shown in this illustration were made just for an exhibit place in a large hall where many other exhibits were. It therefore was only a temporary construction and yet it had all the attractiveness of permanency of a regular bungalow interior.



Exhibition Booth Made with Neponset Wall Board.

In building this the quartered oak and the cream white Neponset finishes were used. These finishes are waterproof and require no painting, so that it was simply a matter of putting up the sheets of wall board, covering with battens and

arranging the furniture and fixtures. These rooms not only made an excellent place for the dealer to show his wares, but also benefited those who put the material up, because they were the center of attraction and caused a great deal of comment, and the rooms were crowded with many visitors during the Exposition. This naturally led them to inquire about this material and resulted in further work of the same sort.

The new heavy weight quartered oak Neponset Wall Board is especially attractive and an excellent material for making wainscoting and paneling in dining rooms and other suitable places.



Steel Has, to a Great Extent, Revolutionized Ceilings in Modern Building Practice

When steel ceilings were first introduced, they did not meet with general satisfaction, as their effectiveness from a decorative standpoint was greatly impaired by the lack of artistic consistency.

Realizing this weakness, The Berger Mfg. Co., Canton, Ohio (the pioneers in the artistic development of embossed steel ceilings), by persistent effort, developed a series of eleven distinct classes of designs in "Classik" Steel Ceilings—Greek, Roman, Romanesque, Gothic, Moorish, Italian Renaissance, German Renaissance, French Renaissance, Rococo, Empire, Colonial and a modern treatment in Stucco effects. Each of these designs and treatments is complete and has a large variety of patterns to select from. Bold, massive, elaborate effects, or those comparatively simple may be secured.

Berger's "Classik" Steel Ceilings combine the characteristic graceful outlines of plastic relief with the mechanical and constructional advantages of sheet metal. The dies, from which these ceilings are made, are reproductions of skilfully clay-molded originals, while the stamping brings out the

(Continued to page 196.)

GET ONTO THIS APPROVED SAFETY SCAFFOLD BRACKET

Take no chances of injury or as to damages

U. S. Patent issued June 8th, 1915, also patented in foreign countries

APPROVED BY STATE DEPARTMENTS OF LABOR AND INDUSTRY, for Your Safety

THE MINNESOTA DEPARTMENT OF LABOR AND INDUSTRIES SAYS:—

"We do not hesitate to say to you in the interests of safety and practicability in the erection of scaffolds on buildings, that we consider the safety bracket manufactured by the Safety Bracket Company, Thief River Falls, Minn., the best of its kind that has been called to our attention, and we heartily approve of the same and recommend its use in building construction work."

Yours truly,

W. F. HOUK, Commissioner of Labor.
Per J. P. Gardiner, Assistant."

SAFETY BRACKET CO. THIEF RIVER FALLS, MINNESOTA.

It saves accidents to workmen and damage suits against contractors, time, money, materials, and covers the least building surface (appreciated by stucco men). The safest, simplest, cheapest, strongest and most practical scaffold bracket ever invented.

It brackets perfectly completely around the building. The ONLY one-piece, all metal, scaffold bracket made. A child can easily put it in place, and take it down.

If your hardware dealer does not have them, write us and we will give you discount prices on your first order. Order immediately, and protect your workmen and yourself.

Brackets are made in 4, 5 and 6 foot lengths as ordered. Standard 4-foot lengths, **\$12.00 per dozen.**

Hole for 8d nail

For further information or particulars, write us.

Safety Bracket Co.
Thief River Falls, Minn., U. S. A.

Slotted holes for 20d nails

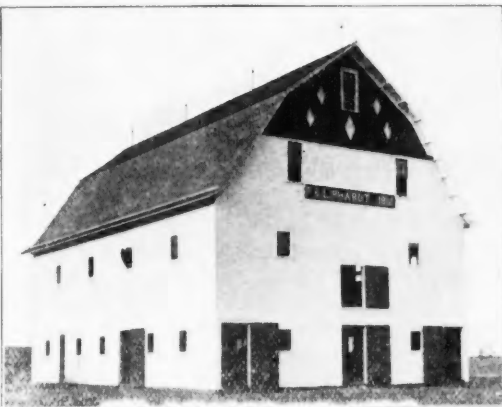
The Perfect Corner Finish for Lap Siding— Kees Metal Building Corners



A Country Home in New York State



An Oklahoma Farm Home



A Nebraska Barn

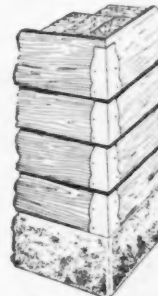
Farmers have been quick to see the advantages of this construction.

It gives the popular "mitred-corner" effect without the slow expensive work of beveling the siding. There is no joint to spread open.

Kees Corners present a perfectly smooth finish, absolutely weather-proof. Made of heavy galvanized iron, treated to take and hold paint or stain the same as wood.

They **save** more than their cost.

Kees designs are right—no bumps to catch moisture and dust. Nothing to detract from the clean-cut, workmanlike appearance of the building.

Square Outside Corners
(Plain Pattern)Inside Angles
(Plain Pattern)Outside Corners
(Fancy Pattern)

The Kees line is complete—outside corners and inside angles, plain or fancy patterns for all widths of siding and shingles up to 12 inches.

Thousands of homes in all parts of the country have been finished with **Kees Corners**. Let us send you photos of some of them.



A Well-Screened House is even more desirable in the country than in town.

Screens that cover the entire windows are the only kind that give real protection.

To make them most convenient hang them from the top with **Kees (Gossett) Hinges**. Then they can be put in place or taken down or replaced with storm sash quickly and easily. Your customers will appreciate it if you recommend them.

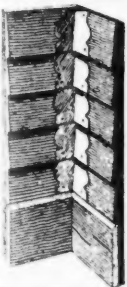


Send a card today for samples and profit-making particulars.

F. D. Kees Mfg. Co. Box 552, Beatrice, Nebr.

Chief Metal Building Corners

Warp-Proof—Rust-Proof—Fit Anywhere



They make a corner with the smoothness and neat appearance of a "mitred corner" and save the time and labor of beveling down the siding. Made of heavy galvanized steel. Fit any corner—inside or outside and make a smooth corner that does not hold dust or moisture. Cannot warp or split, and prevents warping of the siding.

Chief Corners protect buildings from injury and are practically indestructible. Furnished ready perforated for nailing to the siding. Put on easily and quickly. Can be painted any color or left unpainted as desired.

Write for free sample and full information



SHRAUGER & JOHNSON :: 430 Walnut St. ATLANTIC, IOWA

BIG PROFITS—

for the Contractor who installs

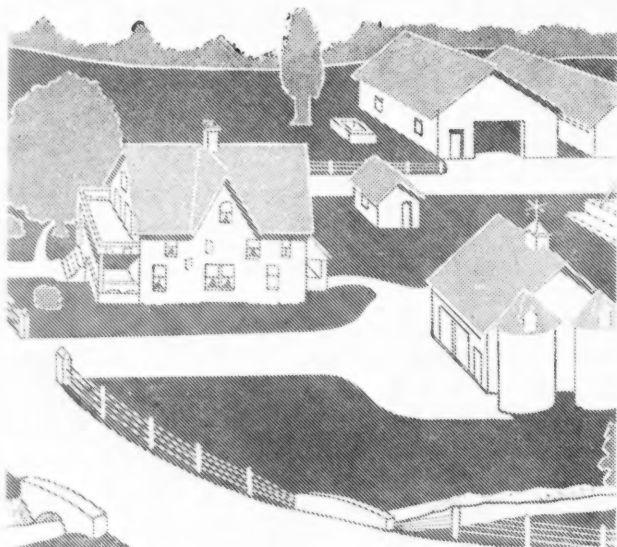
Pullman Metal Weatherstrip

The easiest and most profitable sideline ever offered to a contractor and we give carpenters and builders exclusive territory and special factory prices.

Get the agency for your town now. Write immediately for literature and terms of our proposition

Pullman Metal Weatherstrip Co.
York, Pa.





Make Farm Improvements Everlasting

Make them of concrete and they will stand for all time—will resist fire, water and wear. Concrete construction is fast becoming the only method for most farm building. Cement is the sinew of concrete construction and it should be pure, live, active, and great in binding power. You can depend on the full strength of all your concrete work when you use good sand, clean stone and

ALPHA THE GUARANTEED PORTLAND CEMENT

In all ALPHA plants the chemists are real bosses. They make tests every hour, day and night, to see that the raw materials are proportioned exactly right, that the burning is thorough, that the grinding is finer than required by standard specifications, that the finished product is as good as can be made.

Be careful, the Government advises in Farmers' Bulletin 481, to "select some well-known make guaranteed by the local dealer to meet the standard specifications for cement of the United States Government." ALPHA is warranted to *more than* meet the Government requirements and all other standard tests. ALPHA costs you no more than any other high grade cement.

Ask the ALPHA dealer in your locality for the book, "ALPHA Cement—How to Use It," which shows how to construct concrete barns, ice houses and other buildings; silos, pits, troughs, walks, roads, floors, steps, etc. If you do not know the ALPHA dealer, write us, mentioning what you are planning to make or build. Ask for Book No. 10.

ALPHA PORTLAND CEMENT CO., General **EASTON, PA.**
 Sales Offices: New York Philadelphia Boston Pittsburgh Baltimore Savannah



beauty of design—sharp, clear, and true.

Besides their intrinsic attractiveness, steel ceilings are safe and durable. Unlike plaster ceilings, they are fire retardant and cannot crack, chip or fall down.

A unique feature of Berger's "Classik" Steel Ceilings is the improved bead and button construction which makes a perfectly tight joint without tamping and calking. The erection is quickly and easily accomplished. If desired, a steel ceiling may be erected right over an old plaster ceiling.

Considering them from any standpoint—attractiveness, safety, durability, and economy—Berger's "Classik" Steel Ceilings offer an ideal ceiling for any style or type of building.



The Place to Go or to Write

Time often answers the phrase, "It can't be done." With the advent of another year as a mile stone by which to measure progress, 1916 sees the Permanent Building Material Exhibit even more firmly established in Chicago.

There is no longer any atmosphere of experiment surrounding this huge exposition of building material and equipment. While the question of its permanency is long since settled, still today finds a spirit of confidence such as is only engendered by the full sort of success.

When we look for the underlying principle of any enduring institution, we usually find that it exists because it serves. Never was this truer than it is of this enterprise in Chicago, which covers the immense second floor of the Insurance Exchange Bldg., one of the landmarks among Chicago's office buildings.

From the very first, the Building Material Exhibit stood to serve—to co-operate with the architect, contractor and builder—to assist the prospective home owner to make a tour of inspection and of actual sight-seeing which would otherwise be impossible. It was to be—and is today in its fullest achievement—a clearing house of information, of facts and figures and side-by-side comparisons which would otherwise be impossible to obtain.

When one considers the vast scope of this exhibit, when one realizes that here gathered under one roof are over 175 exhibits of building material and equipment, then it is a simple matter to see how this institution under the proper direction serves so splendidly the public for which it was instituted.

"In the permanent building material exhibit we have such a big thing," said Mr. J. P. Foraker during a recent interview, "we have found ourselves in a quandry of explaining to the public what we really have. By that I mean visitors frequently say to us, 'I had seen your advertising and knew this was a big thing, but until I came up here I had no idea of its scope and utility.'"

"When you consider that we have on display here all sorts of building material and equipment, from andirons to hydraulic elevator machinery, you can readily understand why the casual visitor is impressed with the size of our exposition. It is gratifying to us, however, to see the steady increase in the number of visitors and to respond to the numerous inquiries we are constantly receiving by mail and over the 'phone from contractors, builders and architects who have come to regard this exhibit as a headquarters for building information of all sorts."

While the Building Material Exhibit has been advertising from its inception, it recently launched a campaign of publicity on increased dimensions. Chicago newspapers, the platforms of the elevated stations and national trade journals are a few of the media being used to inform the public at large about the Exhibit.

While the Exhibit is intended primarily for the actual visitor, who can in this way scrutinize the materials they come

(Continued to page 198.)



Bay State ^{Brick and Cement} Coating

is a *permanent protection* for cement, concrete and stucco. It gives an absolutely weatherproof surface—closes the pores of the cement so that rain and snow can't seep through. It comes in white and a variety of tints. This enables you to overcome the dull blue-gray or any blotchy appearance of cement. Dries flat, preserving the distinctive texture of concrete and stucco.

Bay State Coating

for interior walls can't be touched by lead-and-oil or cold-water paints. It is light-reflecting, fire-retarding, and will not chip or peel.

All we say of Bay State Brick and Cement Coating is backed up by engineers and master builders. You will find their story in our free Booklet 30. And, if you request it, we'll send you color card and sample can of Bay State Coating.

WADSWORTH, HOWLAND & CO., Inc.
Paint and Varnish Makers Boston, Mass.



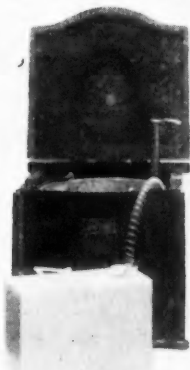
Have You Tried Sanitor For Farm Use?

What Are The Essentials?

To be sanitary, a closet must destroy disease germs which may be deposited in it. It must not permit the escape, into the room, of obnoxious fumes or gases. It must destroy or repel insects, flies or rodents which might, by any chance, find their way into it.

The SANITOR Closet Does All This.

The SANITOR closet can be installed in any room, hall or clothes closet in the house.



Sanitor B3-C

It is guaranteed to be absolutely odorless and Sanitary.

There are various models of SANITOR inside toilet closets suitable for all purposes—Home—School—Factory—Railroad.

Backed by the oldest, largest and most reliable company in the business. Special terms and commissions to contractors and builders.

The B3-C SANITOR is constructed entirely of quarter-sawed oak, seat and lid made of five pieces with three-inch tongue and grooved cemented together which prevents warping and cracking.

WEST DISINFECTING CO.

Sanitor Dept.

12 East 42nd Street, New York, N. Y.

\$60 A WEEK AND THIS FREE AUTOMOBILE

EVERY AGENT CAN
GET AN AUTO FREE
NO CONTEST



**Tub
Guaranteed
For Ten Years**

You—yourself—can positively make \$60 a week and get a **Free Auto**. I want men, hustling, energetic, ambitious fellows, anxious to make money, who are willing to work with me. Not for me, but with me. Are you that kind? I want you to advertise, sell, and appoint local agents for the biggest, most sensational seller in 50 years—the ROBINSON FOLDING BATH TUB. **Demonstrating Tub Furnished.** Here's an absolutely new invention—nothing like it. Makes instant appeal. Sells easily. Gives every home a modern up-to-date bathroom in any part of the house. No plumbing, no waterworks needed. Folds in small roll, handy as umbrella. Self-emptying, positively unbreakable. Absolutely guaranteed for 10 years. Remember, fully 70% of homes have no bath rooms.

Sensational Sales Successes

Two sales a day means \$300 a month. Breeze, of Idaho, made \$400 profit in 30 days. Rev. Otto Schulz, Mo., got \$1600 to date. Burkholder, Mont., orders \$1072 in 17 days. Hamlin, of Wyo., made \$60 first two days. Hundreds like that. Pleasant, permanent, fascinating work. Write a postcard. Let me write you a long letter. No experience needed, no capital. Your credit is good if you mean business. But you must be ambitious, you must want to make money. That's all. Write a postcard now. I want to pay you \$60.00 every week.

H. S. ROBINSON, PRES. THE ROBINSON CABINET MFG. CO.
4053 Factories Building TOLEDO, OHIO



Some of the Artistic and Educational Booths at the Building Material Exhibit, Entire Second Floor Insurance Exchange Building, Chicago, Illinois.

sider using, still it has a service to offer out-of-town people, who can send in their plans to the Exhibit management, who will secure estimates, information, etc., for them.

Remember the address—entire second floor Insurance Ex-

change Building, Jackson Boul. and Fifth Ave., Chicago. When in the vicinity drop in. Or write the Management or any one of the exhibiting firms individually as listed on another page.

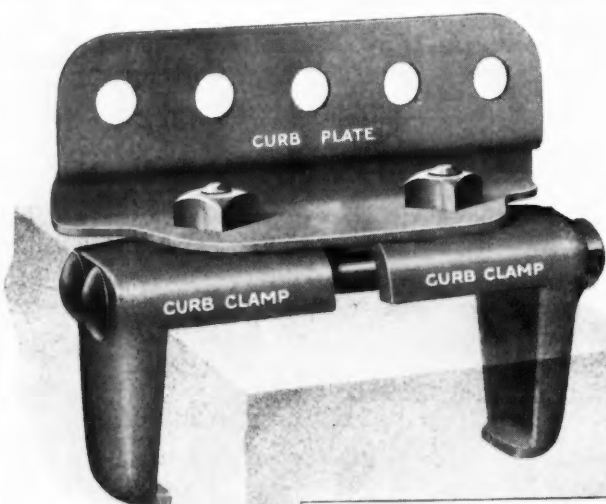


Fig. 685

Details of Construction

The STAR CURB CLAMP is as simple as "A-B-C." Just two malleable jaws, adjustable to the curb by means of draw bolts. Hold as securely as the Rock of Gibraltar, yet can be removed instantly if you want to take out a stall. Fully protected by patents.

Cut Your Work With The New Star Curb Clamp

(Patented)

Enables You To

"Set a Stall in 60 Seconds"

The new Star Curb Clamp enables you to go right ahead and finish up the curb with the rest of the concrete work—you don't have to wait for the arrival of the stalls—you don't even have to make provision for them!

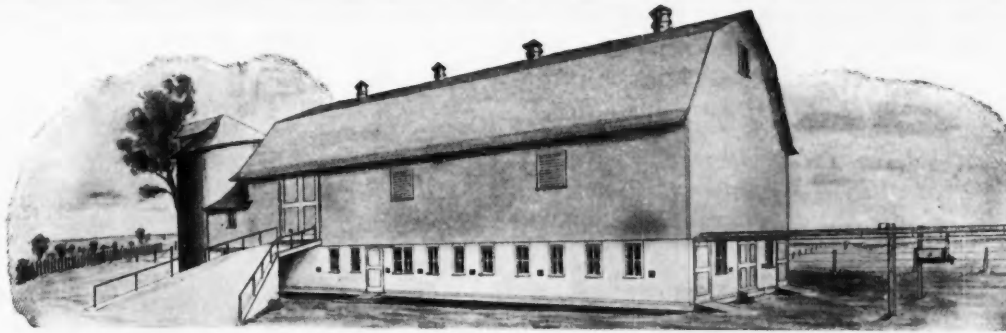
No more templets—no more anchors—no more chance of mistakes.

All Star Steel Stalls now come equipped with Star Curb Clamps. All you have to do to set the stall is—drop the clamp over the curb and tighten the bolts.

Write Us For Detailed
Description and Circular

Hunt, Helm, Ferris & Co.

305 Hunt Street, Harvard, Ill.



CONTRACTORS—

Are you going to secure your share of the barn contracts to be awarded in the near future? You will agree with us that this work is of a profitable nature, and especially so in view of the assistance we offer.

Our Free Service Bureau is maintained for the benefit of all those interested in better barn construction and equipment. Floor plans are submitted without expense or obligation, and any additional information is promptly furnished upon application.

PORTER STEEL STALLS, COW STANCHIONS, LITTER CARRIERS, BARN DOOR HANGERS, HAY CARRIERS, FORKS, HAY SLINGS AND OTHER TOOLS ARE ACKNOWLEDGED LEADERS EVERYWHERE

Investigate and determine the prospective barn builders in the community; then call on us for any assistance relative to interior arrangement, construction, ventilation, etc., and see to what extent Porter Service serves.

New Barn Plan Booklet and Complete Catalog furnished upon receipt of your letter containing the names of parties who expect to build or remodel barns.

Write today and learn more about modern barns and equipment.

J. E. PORTER COMPANY, 620 Fremont Street, Ottawa, Illinois

A Free Book of Money-Saving Ideas for Dairy Barn Builders



You will be interested in reading "The James Way." It tells many of the things learned by W. D. James—America's foremost dairy barn designer. It will help you make more money.

It tells about the new plank frame construction, the famous King system of ventilation, perfect lighting, proper width and arrangement. It tells about stable floors, site, size, appearance, design, drainage and equipment. And it shows four floor plans of barns that have attracted widespread attention.

You can obtain a copy of this valuable, helpful book free. Merely answer these few questions and the book will come by return mail. For whom do you expect to build or remodel dairy barns? (Give names and addresses.) When? For how many cows? Address

JAMES MANUFACTURING COMPANY
8675 Cane St., Fort Atkinson, Wis.

Special Offer of Blue Prints

Mr. James wants to make you a special offer of complete working blue prints of modern dairy barns of different sizes and types. Also ask how to secure free help from our architectural department. Write today.



Monarch Steel Hoists



Adjustable locking device giving adjustment of nearly ninety degrees.

You do not have to stand under the load to operate the Monarch Steel Hoist

Ask your dealer to show you the Monarch. It is made in four sizes, for $\frac{3}{4}$ " to $\frac{7}{8}$ " rope with one, two or three sheaves. Used by thousands of Contractors and Builders.

Write for catalogue and further information

The Ney Mfg. Co., Canton, Ohio



*Residence Edward Lowe, Grand Rapids, Mich.
Winslow & Biglow, Architects, Boston*

For the Best Buildings—

Whether it is a fine residence, hotel, restaurant or public institution where the most efficient refrigeration is demanded, **McCray Refrigerators** are usually selected. The McCray Patented System gives them unquestioned superiority.

McCray Refrigerators

You can select from a large variety of ready built sizes to meet any need or you can have special sizes built to order to fulfill any requirement. In the better homes **McCray Refrigerators** are built into the kitchen or pantry with outside icing arrangement and conform to floor plan and interior trim.

Plan Service Free

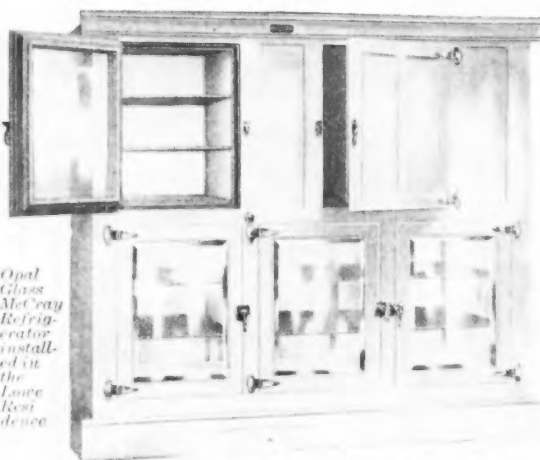
We maintain a special draughting department where we co-operate with architects and builders and furnish ideas and suggestions for any type of refrigerator equipment.

Get These Catalogs and Complete Your Files

*No. 92—Regular Sizes for Residences No. 61—For Meat Markets
No. 59—For Hotels, Clubs, Institutions No. 70—For Grocers
No. 74—For Florists*

MCCRAY REFRIGERATOR CO., 660 Lake St., Kendallville, Ind.
New York: McCray Bldg., 7-9 W. 30th St., Chicago: 1000 S. Michigan Ave.

Agencies in all Principal Cities



Refrigerator History

Over thirty years ago E. E. McCray commenced building refrigerators under the McCray system—patented a short time prior by his father, Hiram McCray. The McCray patents were founded on the idea that in order to have perfect refrigeration it was necessary to have a perfect circulation of air inside the refrigerator.

Mr. McCray advocated the principle that has since come to be recognized by all manufacturers of refrigerators, that cold air of itself does not refrigerate and that in order to have perfect refrigeration it is necessary to have cold, dry air that is constantly in circulation. This is the same principle by which a flowing stream purifies itself. A stagnant stream



**MR. E. E. MCCRAY, Who Developed the
McCray System of Manufacturing
Refrigerators.**

of water soon becomes foul and filled with impurities.

On this great principle of refrigeration the success of the McCray Refrigerator Company has largely been built.

The McCray experts have investigated the requirements for every kind of refrigeration. They have devised scientifically constructed refrigerators that meet every requirement of grocers, meat markets, hotels, clubs, restaurants, residences, public institutions, hospitals, florists, confectionery stores etc., and a line of refrigerating display cases that are recognized as standard throughout the world.

Starting with a small, poorly equipped plant at Kendallville, Ind., over thirty years ago—firmly resolved to build a better refrigerator than anyone else built—the business of the McCray Refrigerator Company has grown steadily until today its output is the greatest in volume of any refrigerator concern in the world, and the McCray is recognized around the world as the standard for quality and efficiency.



Plastergon for Farm Buildings

There are new farm buildings being built all over the country and there are also many buildings being fixed over and altered. Both these types of building offer great opportunities for the builder who understands the use of wall board. For all kinds of interior finishes there is nothing that is as easily handled as wall board if a good grade is used and if it is put up right.

Plastergon wall board has been used with considerable success in this class of work. The makers of this wall board

(Continued to page 202.)

Specified by Progressive Contractors

The Herrick Outside Icing Refrigerators

are becoming more popular every day



THEY are built for service and give it. Scientifically constructed to assure perfect air circulation, they keep foods clean and fresh. Economical in operation as the Herrick is in use every month of the year, and requires no ice in cool weather.

And as for the housewife—think of the advantage of keeping the iceman out of the kitchen, eliminating the attendant fuss, muss and delay. She can leave the doors locked with the assurance of the ice being delivered and without the danger of any one entering the house or getting into the refrigerator and she will appreciate added space in the room.

You cannot afford to be without information on this modern building idea and you will create added interest in your plans and build up your reputation by suggesting and specifying the Herrick.

Send us a rough sketch of your plans, and let our Service Department figure the cost of installing the Herrick.

Herrick Refrigerator Co.
WATERLOO, IOWA

SHOWING THE ATEN SEWAGE DISPOSAL SYSTEM

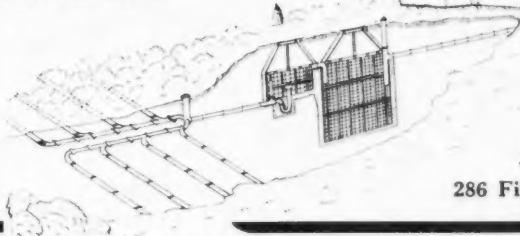
Installed for the MODERN FARM HOUSE

as Illustrated in this Issue

The ATEN System meets the needs of the country home. Simple and inexpensive to install. Indestructible and "fool proof." Will last a lifetime. Cleaning out not necessary.

Contractors and builders can install this system with unskilled labor, at a good profit.

Write for further particulars and our Book No. 8.



Address

Aten Sewage Disposal Co.

286 Fifth Avenue NEW YORK CITY

Try it Ten Days FREE

Here's a desk appliance that's a time and temper saver as well a labor and money saver. The "one-man" office profits by its use as much as the largest organization.

SEGBUSCH
Self-Closing
INKSTAND

Every pen-dip gives the joy of using a perfect tool. No more dirty, thick ink, or dried-up ink-well. It's always ready, clean, handy.

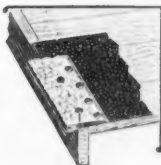
Use it Ten Days Free

We'll send you one to use in your own way for ten days. Then if you don't think it worth the price—\$1.50—send it back. For the sake of economy and efficiency, try it, anyway.

Sengbusch Self-Closing Inkstand Co.
1003 Stroh Building, Milwaukee, Wis.



Sectional View
Center
Float
Closes
Bottle
Like a
Cork
When
Pen
Is Out



SHINGLO

Formed Metal Strips for Binding the Edges of a Building Covered with Prepared Roofing

Gives a Building a Finished Appearance. Drips the Water away from the Building. Gives a finish line for Painting. Requires less Roofing. Quickly put on. Saves Roofing and Labor.

Send for Circulars and Prices.

The Specialty Mfg. Co.
St. Paul, Minn.



SHINGLO

ADDS 100% TO THE APPEARANCE AND DURABILITY OF A ROOF

SECTIONS INTERLOCK QUICKLY PUT ON

PATENTS PENDING

FOR ALL KINDS OF PREPARED ROOFING

are sending out samples that show the quality of the material they are making. The sample shows that the board is very stiff and has a fine surface to receive paint. The wall board is sized and waterproofed at one operation. They suggest that the sample they are sending out to be tested to show that it possesses all the good qualities they claim for it.

Builders can obtain a sample and complete particulars from this concern by writing to them at 101 Filmore Ave., Tonawanda, N. Y. The value of Plastergon wall board will be shown in their booklets and circulars.



Porter Equipment Installed in Watertown Hospital Dairy Barn

The accompanying illustration shows the interior of the Watertown Hospital dairy barn. This barn was designed by James B. Dibelka, Illinois State Architect.

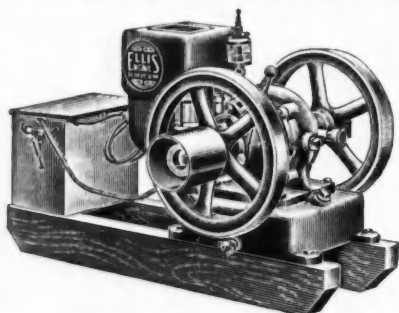
For the equipment Porter material was specified. The litter carrier, stall partitions, and stanchions shown in the illustration are all made by the J. E. Porter Company. The feed carrier on the other side of the stalls, that does

not show, was also made by the J. E. Porter Company.

The appearance and method of constructing their equipment show well in the photograph. This concern is located at 620 Fremont St., Ottawa, Ill. Write for their barn book.



J. E. Porter Co. Barn Equipment at Watertown Hospital Barn.



All sizes for all purposes. $1\frac{1}{2}$ to 18 H. P. Vertical and horizontal. Guaranteed 10 Years.

Don't Pay For Your "Ellis" without getting it

Every carpenter or contractor who does not use a reliable engine is paying for the engine without getting it. He pays for it in lost time, and in labor costs. You can buy an Ellis Engine out of two weeks' wages to one workman; and your Ellis will give you reliable service for many years.

Ellis Engines are America's favorite with carpenters, contractors and builders. Very compact in design; light in weight in proportion to power. Easy to operate; no cranking. Run either way; reversible while running. They work successfully on common cheap lamp oil at a fuel cost of

6 cts. for 10 hours

for each horsepower developed. Just the thing for woodworkers, rip-saws, planers, cement mixers, hoists; in fact, for every job where power can be used. Write for free book, "Engine Facts," giving valuable information and full details of our 30 Days' Free Trial Offer, with opinions of users from all parts of the world.

Ellis Engine Co., 2863 E. Cd. Boulevard, Detroit, Mich.

CARPENTERS AND SHOP MEN—

RETAIL PRICES

Stationary Engines

2 H.P.	\$ 35.10
3 H.P.	52.65
4 H.P.	70.20
6 H.P.	100.00
8 H.P.	140.40
12 H.P.	210.90

Portable Engines

2 H.P.	\$ 40.15
3 H.P.	60.75
4 H.P.	83.35
6 H.P.	130.00
8 H.P.	176.80
12 H.P.	248.00

Engine Saw-Rigs

4 H.P.	\$128.25
6 H.P.	155.90
8 H.P.	205.00
12 H.P.	272.50

(F. O. B. Factory)
**5 YEAR
GUARANTY**

Here is a fast seller at the retail prices shown at the left. Our liberal dealer's discounts from these prices make you a good profit. Complete line of sizes and styles as here listed. With this agency, you can do the engine business of your trade territory. Write us now while your territory may still be open.

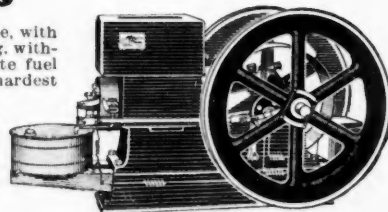
Keco ENGINES
Gasoline, Kerosene & Gas

Through and through high quality. Center-firing, valve-in-head type, with automobile style ignition. Safety spark-shift for easy and safe starting, without cranking. Best of materials and workmanship, with up-to-date fuel saving design of engine. Simple to operate, and durable under the hardest wear, giving even speed and continuous power.

Sold on Trial Every engine fully guaranteed for durability, capacity and all around efficiency. Write for our dealer's proposition under which you can handle this line without risk under our buy-back-in-90-days' selling plan. Let us show you the profit in this agency.

Manufacturers Engine Co. 1629 Crystal Avenue
Kansas City, Mo.

**Sell
This
Engine!**



WANTED AGENTS - SALESMEN - MANAGERS WANTED

STARTLING OPPORTUNITY TO MAKE MONEY FAST
At Home or Traveling—All or Spare Time

Experience not necessary. Honesty and willingness to work all we ask. We will give you an appointment worth \$50 to \$75 every week. You can be independent. Always have money in abundance and pleasant position selling greatest labor saving household invention brought forth in fifty years. **LISTEN:**—One man's orders \$2,650.00 one month, profit \$1,650.00. Sylvester Baker, of Pa., a boy of 14 made \$9.00 in 2½ hours. C. C. Tanner, Ia., 80 years old, averages five sales to seven calls. See what a wonderful opportunity! Room for YOU, no matter what your age or experience, or where you are located—if you are square and will act quick. But don't delay—territory is going fast. Read what others are doing and be influenced by their success. **WORK FOR US AND GET RICH.**

"I do not see how a better seller could be manufactured," writes Parker J. Townsend, Minn. "Called at twenty homes, made nineteen sales."—E. A. Martin, Mich. "Most simple, practical, necessary household article I have ever seen" says E. W. Melvin, San Francisco. "Took six dozen orders in four days,"—W. R. Hill, Ill. "Went out first morning, took sixteen orders,"—N. H. Torrence, New York. "Started out 10 a. m., sold thirty-five by 4 o'clock,"—J. R. Thomas, Colo. "Sold 131 in two days,"—G. W. Handy, New York. "I have sold goods for years, but frankly, I have never had a seller like this,"—W. P. Spangenberg, N. J. "Canvassed eleven families, took eleven orders,"—E. Randall, Minn. "SOLD EIGHTEEN FIRST 4½ HOURS. Will start one man working for me today, another Saturday,"—Elmer Menn, Wis.

These words are real—they are honest. Every order was delivered, accepted and the money paid in cash. Every letter is right here in our office, and we will give the full postoffice address of any man or woman we have named if you doubt. This is a big, reliable, manufacturing company, incorporated under the laws of the State of Ohio, and every statement we make is absolutely sincere and true.

YOU CAN MAKE THIS MONEY: You can make

\$3000.00 in 3 Months

selling this great invention—The Easy-Wringer Mop—the biggest money maker of the age. Think of it!

A Self-Wringing Mop. No putting hands into the dirty water. No aching backs. No slopping against woodwork. No soiled clothes. No contracting deadly disease from touching hands to filth and germs that come from floor. Can use scalding water containing strong lye. Two turns of crank wrings out every drop of water. Makes house-keeping a pleasure—Makes the day happy. Simple, practical, reliable, it lasts for years. Every woman is interested—and buys. No talking necessary—it sells itself. Simply show it and take the order. Could you imagine an easier, quicker, better way to make money than supplying this demand already created.

We want more agents, salesmen, managers, to fill orders, appoint, supply control sub-agents, 150 per cent profit. No investment required. We own patents and give you exclusive territory, protection, co-operation, assistance. You can't fail, because you risk nothing. **HUNDREDS ARE GETTING RICH.** Act quick. Write for your county today. **WE WANT A THOUSAND MEN AND WOMEN.**

Send no Money: Only your name and address on a postal card for information, offer and valuation booklet FREE. Tomorrow belongs to the one behind—the opportunity is open TODAY. Write your name and address clearly, giving name of county.

THE U. S. MOP COMPANY, 373 MAIN ST., TOLEDO, OHIO.

TURN CRANK TO WRING THE NEW EASY WRINGER MOP



New Low Priced Household Article.

ENGINE PRICES DOWN ANOTHER NOTCH!

Look at these Prices!

2 H-P, \$34.95; 4 H-P, \$69.75;
6 H-P, \$97.75; 8 H-P, \$139.65; 12 H-P, \$197.00.
Other sizes up to 22 H-P, proportionally low.

Direct from Factory to User!

Why pay two prices for any good engine, or take chances on a poor, or an unknown engine, when the "WITTE" costs so little, and saves you all the risk.

WITTE ENGINES, Kerosene, Gasoline & Gas

Stationary, Portable and Saw-rig Styles.

Liberal 5-Year Guaranty

CASH OR EASY TERMS.

LET ME send you a "WITTE" engine to earn its own cost while you pay for it. It's cheaper than doing without one. I have proved that to thousands who are now WITTE users.
Ed. H. Witte.

GET your engine from an engine specialist. All my life I have done nothing but make engines. **The success of my customers and nothing else, makes my success.** I've simply got to sell better engines. I can't lose money on an engine and make back the loss on something else. My present big factory has been built up only by my engine quality.

It is cheaper and easier to own a "WITTE" engine than to do without one. My New Offer makes it easier to get the work done by machinery than by muscle or brute power. No need now to get along without a "WITTE." **New Book Free** My New Book—the finest in the whole engine business—explains all. It tells you how to be sure in your selection, even if you don't pick a "WITTE." Send me your address today, so I can send you this book FREE with my New Offer.

Ed. H. Witte, Witte Engine Works,
1774 Oakland Ave., Kansas City, Mo.
1774 Empire Bldg., Pittsburgh, Pa.

HOW TO JUDGE AN ENGINE

READ THIS BOOK BEFORE YOU BUY ANY ENGINE IT IS SENT FREE FOR THE ASKING.

Free Engineering Service Goes With

Colonial Motors

WE have made a specialty of motor drive for woodworking machinery. Our experts will specify the correct motors to properly and efficiently operate your woodworking and other machinery. This engineering service is FREE whether you purchase from us or not. Your machine cannot do its work efficiently unless backed by a motor correct in speed, windings, control and all other details. This information is yours upon request and without cost to you.

CURTIS & CARHART, Inc.
Engineering Dept.
152 Chambers Street, New York



MACHINERY AGENTS: NOTICE! We have machinery inquiries of interest to you—Write us

Experts Want the Best

The old-fashioned Handmade In-laid Bitt.

STEEL POLL

Hammered out, not machine made. For the steady and expert user. SAFE and ECONOMICAL.



WARRANTED

\$1.50 postpaid (specify weight). Handle 50c extra

THE G. WHITE AXE CO., Honesdale, Pa.

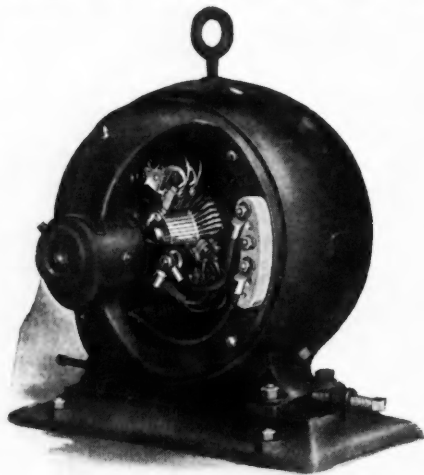
Has special welded and hardened head for severe hammering and driving spikes. Has thin, long-lived edge-holding bitt. Lasts long in blade and poll. **Handmade, therefore Strong, Dependable and Long-lived.**

The Value of Electric Motors

There are many points of value in the use of electric motors for all kinds of plants requiring power. The motor is small and compact and does not use up valuable space. For instance, in a small woodworking shop the motor is often placed underneath or alongside the machine that requires power. In this way it occupies very small space that would not be used anyway. Small, individual motors for each machine are very economical of power as they are switched on or off as the machine to which they are attached is in use or not.

Many of the valuable features of motor-driven machinery are shown in the catalog issued by Curtis & Carhart, Inc., 152 Chambers St., New York City. The methods and materials used in the construction of Colonial Motors and generators are also described in this catalog.

They have an engineering department which will be glad to take up each problem and recommend the type of motor that is especially suited to the conditions. The motor shown here is particularly adapted for woodworking machinery.



Motor Adapted to Running Woodworking Machinery.

Any of our readers that are thinking of electric motors will find their advice of great value, in determining the particular motor for their work. ❖

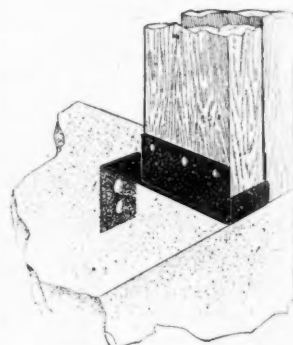
Protect the Studding from the Damp Concrete

The failure of studding is almost always at the end that is in contact with a concrete foundation. The studding of one course does not rest directly on the concrete, but the sill is kept damp and gradually rots away so that the toenailing can no longer hold the bottom of the studs in position. In some buildings the sides remain in apparent strong condition for a while even after this; but if the building has to resist any pressure from the inside it will soon fall down. This condition applies particularly to granaries.

The best kind of insurance for buildings of this kind or for any farm buildings built with a concrete foundation is the studding socket. A very satisfactory type is shown in the illustration here. It is called the Wagner "All-Purpose" cement floor studding socket. Only one style is needed for corners, intermediate studding, etc. The socket is made in two sizes: one to hold 2 by 4 and 2 by 6 timbers and the other to hold 2 by 6 and 2 by 8 timbers.

The makers of this socket, the Wagner Manufacturing Company, Cedar Falls, Iowa, also make various other hardware specialties, including a full line of door hangers for all kinds

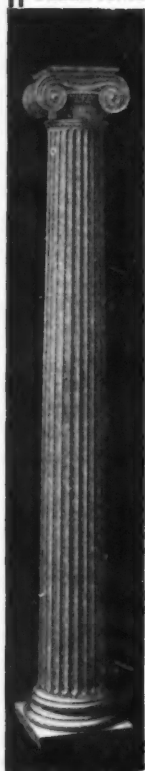
(Continued to page 206.)



The Wagner Studding Socket in Place on Concrete Foundation.

Use Columns More

No. 230
GREEK IONIC



Nothing can ever take the place of columns in the decoration of a building exterior. They are necessary in your work both in construction of new and remodeling old buildings.

Perhaps splitting, checking, rotting and other troubles have kept you from using columns, if so here is a column that does away entirely with every such difficulty.

UNION METAL COLUMNS

"The Ones That Last a Lifetime"

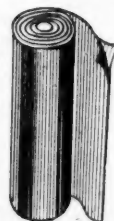
- 1.—They are correct in design. They have entasis, stop flutes and every detail in accordance with the classical orders of architecture.
- 2.—The shafts are formed from sheets of open hearth galvanized steel, fluted by special machinery and will not split, check, warp, rot or open up at the joints.
- 3.—The cost is low enough so that you can use them on any work where you would use a wood column.

Send for booklet No. 9, showing Union Metal construction and many fine installations

The Union Metal Mfg. Co., Canton, Ohio



—the lowest
prices on
Millwork



BUNGALOW "B"

A very pleasing design in a door.
Only \$2.00

ROLL ROOFING

2-ply—per roll \$0.65
2-ply—per roll 0.85

MANTEL No. 1295

4 ft., 5 in. high, 5 ft. wide. Tile Obg., 42 x 39 in., profile 3 in., columns 4 1/2 in.

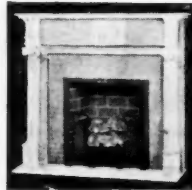
White wood, three coats white \$16.87
White wood, enamel 19.37

STAIR NEWEL No. 101

8 ft. x 4 in.

Yellow Pine \$2.29
Oak 2.50

Send for our mantel and general catalog and find how much you can save.



The
Huber Builder's
Material Co.

45-49 Vine Street
CINCINNATI OHIO



Here is your chance to save money and get the latest designs in

MANTELS

This elegant **quartered oak or birch, mahogany** finished Mantel with enameled tile hearth and facing, coal grate with oxidized copper frame and front.

F. O. B. Cincinnati, **\$27⁰⁰**
for.....

Add \$3.00 if gas grate is wanted

Mr. Contractor, you are missing sales by not having our **Mantel Catalogue**. Write for one today and get

Right on the Mantel Question

We can also supply you with floor and wall tiles for Bathrooms or Stores at the right price.

Moormann & Otten 615-617 Main St., Cincinnati, Ohio

WE have issued *Very Interesting Catalogues* containing valuable information for the Architect, Carpenter and Builder regarding wood columns for exterior and interior use.

Catalogue "U-40" containing useful information about Exterior and Interior Columns.

Pergola Album "U-28" illustrates Pergolas, Garages, Lattice, Fences, Veranda Treatments and Garden Accessories, either one will be sent to those who want it for 10c in stamps.

HARTMANN-SANDERS CO.

Exclusive Manufacturers of

**Kolls
Lock
Joint**



**Patent
Stave
Column**

Main Office and Factory:
Elston and Webster Aves., Chicago, Ill.
Eastern Office: 6 East 39th St., New York City, N.Y.

\$25.00

with your order, will bring this magnificent Book Case Colonnade Complete with Art Glass (no hardware) to your station, all charges prepaid.

This offer is good for a limited time only.

This is the greatest offer ever made.

Do not fail to take advantage of it.

Pedestals 2 feet wide and 3 feet 6 inches high, 6 inch columns, round or square.

Workmanship perfect in every detail.

25 years in our present location; this should be sufficient guarantee.

CHICAGO GRILLE WORKS

828-838 Wells Street

CHICAGO, ILL.

Hornet Mantels Make Houses Sell Better

Here's a handsome **Hornet Mantel** of selected oak or birch, mahogany finish, 77" high and 5' wide, with beveled mirror 14x42. Queen coal grate and enamel tile for facing and hearth—for

\$25⁰⁰

It's bound to make any house more salable. And in our large **free catalog** you'll find illustrated scores of other good ones in a wide variety of styles and prices. Also **Gas Logs, Fire-Sets and Screens**, together with complete simple directions for setting Wood Mantels, Tile and Fireplaces. **Send for it today!**

HORNET MANTEL COMPANY

1147 MARKET STREET :: :: :: :: ST. LOUIS, MO.

of buildings. The tracks and also the rollers are made in several different styles and sizes to suit every purpose.

The descriptive catalog of this concern showing the details of their various products can be obtained by writing to them at the address mentioned. This catalog contains much material of interest and value to the builder.

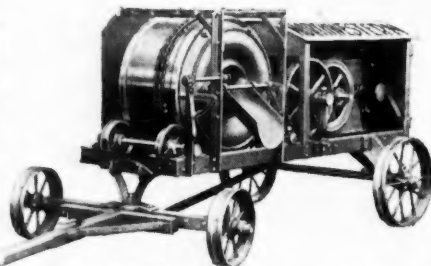


"Northwestern" Concrete Mixer

The 5-foot mixer, made by the Northwestern Steel & Iron Works, Eau Claire, Wis., which is advertised in this issue, will be of interest to many of our readers, particularly as it will be exhibited at both the Chicago and Omaha Cement Shows.

No big radically new features are brought out, but old and proven principles of mixer construction have been united with new "wrinkles" to produce a machine which is claimed to give exceptional value for the price. The Northwestern people are patting themselves on the back for being far-sighted enough to purchase all the raw material entering into the construction of these mixers before the advances in prices took place. This has enabled them to maintain the same base of price which was in vogue for 1915, directly benefiting every buyer of their concrete mixers.

The standard gauge wagon track and the very heavy construction of the truck frame are both worth more than passing notice. The frame is made of 5/16-in. by 2-in. by 3-in.



5-Foot "Northwestern" Concrete Mixer.

angle—with hot riveted cross sections and corner brackets.

This mixer is also built with a 10 ft. capacity, and larger sizes will carry a 20 per cent overload. Contractors will do well to investigate the merits of these mixers before buying.



Protecting the Edge of the Building

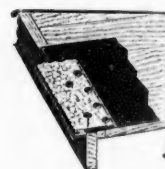
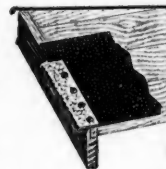
In finishing buildings covered with prepared roofing, the device shown here has been successful in protecting the building and in cutting down the cost.

This sheet iron strip is called "Shinglo" and is made in sections five feet long. These sections lock together, either right or left and have raised holes for nailing which makes it possible to put them on very quickly. "Shinglo" is made in two styles to fit the various parts of the building. One is for the roof edges, gables, and eaves; and the other is for the corners and ridge of the building.

This building help is made by the Specialty Mfg. Co., St. Paul, Minn. They will send further particulars to any of our readers on request.



Formed Metal Strips for Binding the Edges of a Building Covered with Prepared Roofing.



Two Widths of Edging.

Kanneberg

STEEL CEILINGS

made in over Fifty Designs! but one Quality—The Best

Send for our new Hand-Book "Decorative Stamped Metal"

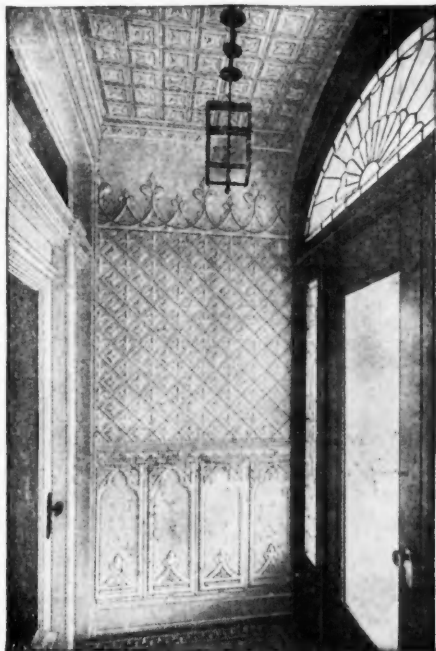
The Kanneberg Roofing & Ceiling Co.
929 - 931 Robin Court E.S.
CANTON, OHIO.

ALFRED W. WOODS' KEY TO THE STEEL SQUARE
A WONDERFUL INSTRUCTOR

It should be in the possession of every carpenter, or those having work in angles. It tells the whole story of how to use the common steel square, to obtain the cuts in degrees, or by inch rise per foot run for all kinds of framing.

Price \$1.50, Postpaid

AMERICAN CARPENTER & BUILDER
1827 Prairie Ave., CHICAGO



Largest Manufacturers of Metal Ceilings, Metal Shingles, Steel Roofing and Siding in the World.

Here's a Real Business Building Opportunity

Edward's Metal Ceilings and Walls represent big profit possibilities to **one** good live Agent in every locality. Hundreds are making big money right now. You can, too, if you will.

Big Demand—Big Profits

The demand for Edward's Metal Ceilings and Walls isn't coming—it's **here now!** Thousands of home owners and home builders are reading our advertisements in the leading magazines.

EDWARDS' METAL Ceilings and Walls

We **must** have more agents. Territory going fast. Our product is **right**. Our prices are **right**. Don't delay a minute. Write for all the facts **N-O-W!** Ask for new Ceiling Catalog—**its free**.

The Edwards Mfg. Co.

"The Sheet Metal Folks"

401-417 Eggleston Avenue, Cincinnati, Ohio

New York Office: 81-83 Fulton St.

Branch Office and Warehouse:

1625-1627 Pacific Ave., Dallas, Texas.

Architectural Sheet Metal Work & Statuary

Our specialty is the reproduction of special designs shown by Architects' Drawings. We have our own artists, efficient workmen, complete factory equipment and years of experience. We will give you best work at reasonable prices. We solicit your inquiries and drawings.

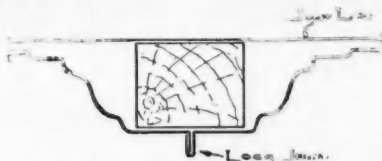
Spanish Tile Roofing in Galvanized Steel, Painted—large stock, best prices.

Correspondence Solicited

THE W. H. MULLINS CO.

214 Franklin Street Salem, Ohio, U. S. A.

METAL CEILING

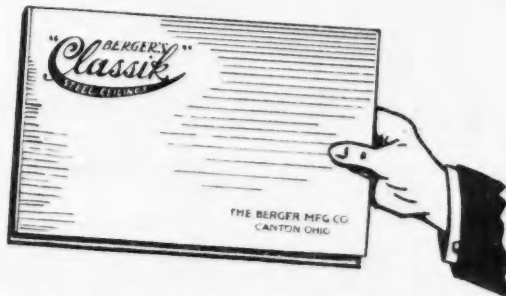


See that Joint?

The Acme of perfect construction. Don't nail or slip the joints. Lock them. Full information in catalogue E.

S. KEIGHLEY METAL CEILING & MFG. CO.
PITTSBURGH, PA.

Send Coupon for this Book



THIS handsome book treats the steel ceiling question in a thorough and exhaustive manner, and contains illustrations of hundreds of different designs suitable for every type of architecture, and shows many installations in various kinds of buildings.

It will prove the "stepping stone" to more contracts for you, because Berger's "Classik" Steel Ceilings are distinctive and beautiful, fire retardant, perfect in construction, sanitary and non-collapsible.

They please the building owner, and make erection easy and profitable for you.

Don't pass this by—send coupon now.

THE BERGER MFG. CO., Canton, O.

BRANCHES — Boston, New York, Philadelphia
Chicago, St. Louis, Minneapolis, San Francisco

The Berger Mfg. Co.,

Gentlemen:

Please send me a free copy of the "Classik" Book D. A. B.

Name

Address

City

"Wonder" Mixers in New Models and a New Size

The Waterloo Cement Machinery Corporation, Waterloo, Iowa, announces an important improvement in "Wonder" mixers equipped with side loaders.

The perfected "Wonder" is, as far as we know, the first and only mixer of similar capacity to which the track loader has been applied. Heretofore this type of loader has been used only on large and expensive mixers.

The track loader saves time because the travel is so short; and because, requiring much less power, it can be run faster with the same engine than the old type. As compared with old style loaders this enables the operator to handle more batches per hour, allowing the same time for mixing, or permits more time for mixing if the same number of batches per hour are handled.

The track rests upon the ground, giving great rigidity to the machine. It is hinged so as to fold back out of the way when moving the mixer about. It can easily be extended so as to load the scoop below ground level.

The illustration herewith shows the scoop elevated and the track folded back ready for moving. Reference to the colored advertising section, pages 20 and 21, will show a larger view of the same machine in working position.

The new loader is "fool proof." A spring bumper takes the shock of the scoop when elevated, in case the clutch is not released soon enough.

There are many improvements and refinements in the mixer part of the machine as well, and it is said the "Wonder" in increased degree, makes good on its slogan, "The Mixer that makes the Money."

The new model "Wonder" with power track loader is built in capacities of 5 to 6 and 7 and 8 cubic feet per batch. The timely appearance of the new model gives opportunity for building contractors to acquaint themselves with the merits

of the new machines before the spring rush begins. Write the Waterloo Cement Machinery Corporation, Waterloo, Iowa, for full description, prices, etc.



"Wonder" Mixer Equipped with Track Power Loader.



Architect and Builder,
W. G. Tower, New Haven, Conn.
"CREO-DIPT" Stained Shingles furnished
through Lampson Lumber Co.
Every lumber dealer should carry Brown, Green,
Red in stock for general work and reshingling.
Special shades can be had on order.

STANDARD STAINED SHINGLE CO.
1028 Oliver Street, NO. TONAWANDA, N. Y.

Factory in Chicago for West

Shingles —the best material ever known for roofs and side walls if you are sure you have

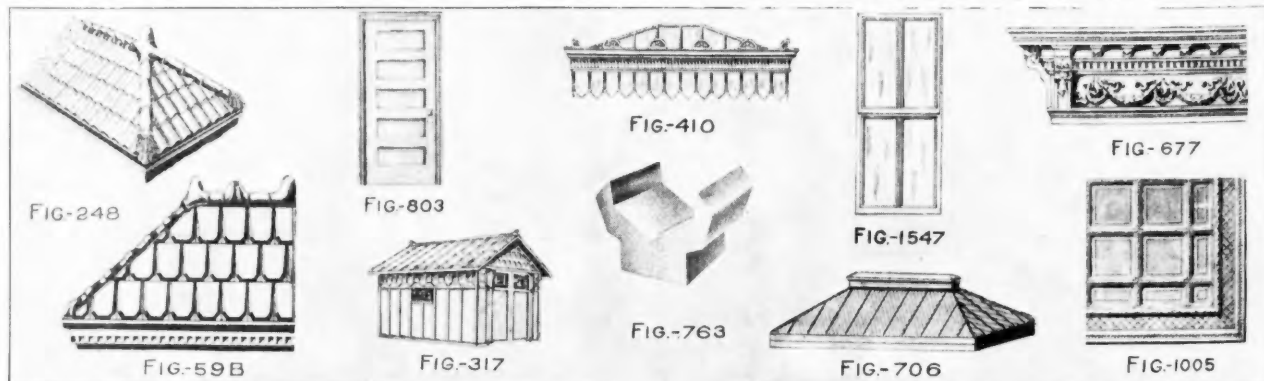
"CREO-DIPT" STAINED SHINGLES

17 Grades 16, 18, 24 inch 30 Colors

Send for Book of Houses and Colors on Wood



"MECCO"-PRODUCTS MADE AT COVINGTON, KENTUCKY



WRITE FOR CATALOG. Everything in Sheet Metal Building Material. GET OUR PRICES. || Manufactured By **The Moeschl-Edwards Corrugating Co., Covington, Ky.** Opposite Cincinnati, O.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

REYNOLDS

APPROVED BY THE NATIONAL BOARD
TRADE MARK
H.M.R.
ESTABLISHED 1868
OF FIRE UNDERWRITERS

FIRE SAFE SHINGLES

Reynolds Shingles are not designed for the city home exclusively—they fit every requirement of a good roofing material. The suburban home, the summer cottage or the farm buildings are the natural places for large volumes of these shingles.

Reynolds Shingles are the best of their kind; they give entire satisfaction; they are guaranteed; they are beautiful, economical to lay and they are fire-safe.

Supplied in four durable mineral surfaced colors—garnet, red, gray and green.

If your dealer does not carry them in stock, we will send samples of colors and mineral finishes on request.

H. M. Reynolds Asphalt Shingle Company

"Originators of the Asphalt Shingle"

Grand Rapids :: :: :: :: Michigan

Cortright Metal Shingles

Lightning-proof

Cortright Metal Shingles

THIS fact alone makes the handling of Cortright Metal Shingles a profitable undertaking for the country carpenter who is alive to the farmers' needs, and wants their business for 1916. Yet there are many other points of merits.

For Farm Buildings

Cortright Metal Shingles gives absolute protection against fire and storm, yet are moderate in first cost and require no repairs.

The progressive Contractor will see his opportunity, and write promptly for our proposition to Contractors, and our interesting book on roofing.

Cortright Metal Roofing Co.
Philadelphia, Chicago

FLEX-A-TILE DIAMOND SLABS



No Slots to cause Leaks

IN a square of ordinary shingles there are 424 spaces between single shingles; in Diamond Slabs there are **none**. This absence of slots means protection from leaks; it means also that Diamond Slabs won't blow up in the wind.

Look at the Other Features of This Wonderful New Roofing

Flex-A-Tile Diamond Slabs save 35% freight cost—38% in nails—50% in labor. They permit of pleasing color combinations that never could be obtained before. They are easier to lay and easier to handle—and they have genuine Flex-A-Tile wearing quality built into them through and through.

Send Today for Samples and Full Particulars

Remember this Diamond Slab is the roofing sensation of years. By all means get samples and full details now. Write today and we'll send them. A post card request will do.

THE HEPPE'S COMPANY

1010 Kilbourne Ave., Chicago, Ill.

Utility Board—No-Tar Asphalt Paint
Flex-A-Tile Roll Roofing
Other Guaranteed Heppes Products

Could
you fill
his
shoes?



Suppose a good job were open where you work. Could *you* fill it? Could you jump right in and make good? Or would the boss have to pass you up because you lacked *training*?

Don't *take chances* on being promoted. If you want a job that pays good money, *get ready for it*.

Pick out the job you want in the work you like best. Then start *right now* to get, through the International Correspondence Schools, the *training* that will prepare you to hold it.

Thousands of men have advanced through I. C. S. training to the very jobs they wanted. What these men have done *you* can do. All the I. C. S. asks is the chance to help you. No matter where you live, the I. C. S. will come to you and train you in your spare time.

The job you want is within your reach. I. C. S. training will win it for you. The thing to do now is to make your start. Here's the coupon—mark and mail it now.

I. C. S., Box 8127, Scranton, Pa.

CUT OUT HERE

INTERNATIONAL CORRESPONDENCE SCHOOLS
Box 8127, SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark X.

<input type="checkbox"/> ELECTRICAL ENGINEER	<input type="checkbox"/> ADVERTISING MAN
<input type="checkbox"/> Electric Lighting	<input type="checkbox"/> Window Trimmer
<input type="checkbox"/> Electric Car Running	<input type="checkbox"/> Show Card Writer
<input type="checkbox"/> Electric Wiring	<input type="checkbox"/> Outdoor Sign Painter
<input type="checkbox"/> Telephone Expert	<input type="checkbox"/> ILLUSTRATOR
<input type="checkbox"/> MECHANICAL ENGINEER	<input type="checkbox"/> DESIGNER
<input type="checkbox"/> Mechanical Draftsman	<input type="checkbox"/> BOOKKEEPER
<input type="checkbox"/> Machine Shop Practice	<input type="checkbox"/> Stenographer and Typist
<input type="checkbox"/> Gas Engineer	<input type="checkbox"/> Cert. Public Accountant
<input type="checkbox"/> CIVIL ENGINEER	<input type="checkbox"/> Railway Accountant
<input type="checkbox"/> Surveying and Mapping	<input type="checkbox"/> Commercial Law
<input type="checkbox"/> MINE FOREMAN OR ENGINEER	<input type="checkbox"/> GOOD ENGLISH
<input type="checkbox"/> Metallurgist or Prospector	<input type="checkbox"/> Teacher
<input type="checkbox"/> STATIONARY ENGINEER	<input type="checkbox"/> Common School Subjects
<input type="checkbox"/> Marine Engineer	<input type="checkbox"/> CIVIL SERVICE
<input type="checkbox"/> ARCHITECT	<input type="checkbox"/> Railway Mail Clerk
<input type="checkbox"/> Contractor and Builder	<input type="checkbox"/> AGRICULTURE
<input type="checkbox"/> Architectural Draftsman	<input type="checkbox"/> POULTRY RAISING
<input type="checkbox"/> Concrete Builder	<input type="checkbox"/> Textile Overseer or Supt.
<input type="checkbox"/> Structural Engineer	<input type="checkbox"/> Navigator
<input type="checkbox"/> PLUMBING AND HEATING	<input type="checkbox"/> Chemist
<input type="checkbox"/> Sheet Metal Worker	<input type="checkbox"/> AUTO RUNNING
<input type="checkbox"/> SALESMANSHIP	<input type="checkbox"/> Auto Repairing
	<input type="checkbox"/> Spanish
	<input type="checkbox"/> German
	<input type="checkbox"/> French
	<input type="checkbox"/> Italian

Name _____
Occupation & Employer _____
Street and No. _____
City _____ State _____

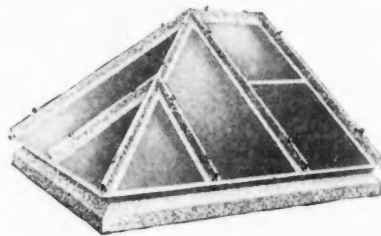
Puttyless Skylights

There exists a large demand for skylights that do not leak. Practically all the trouble encountered with leaky skylights can be traced to the inferiority of the putty used.

To overcome the difficulty and make skylights water-tight there has been placed on the market an especially designed construction which entirely eliminates the use of putty.

Thru mechanical means the joints of glass and frames are made wind and water-tight.

The illustration above shows the details of the construction.



Berger Mfg. Co. Puttyless Skylight.

These Puttyless Skylights have the additional advantage of being more easily and quickly erected, and in the case of a broken glass replacement can be made without difficulty or loss of time.

The Puttyless Skylights are being manufactured by The Berger Manufacturing Company, Canton, Ohio, and any of the Standard Berger Skylights shown in their catalog can be furnished with the puttyless bar construction instead of the standard bar.



New Handy Man Book

The Hardin-Lavin Company, 4532-42 Cottage Grove Avenue, Chicago, wholesale dealers in plumbing and heating supplies, selling direct exclusively, have just finished their new building, an addition to their plant.

They have also gotten out a new book, called the Hardin "Handy-Man" book.

This is very valuable to any contractor or home owner, as it shows absolutely everything in new, modern plumbing and heating, supplies exclusively and wholesale prices on same. It also gives unlimited information on installing plumbing and heating supplies of all kinds the new Hardin easy way, how to make every known repair and many other useful handy man hints.

The firm will be glad to see any of their customers when they are in Chicago.

This book will be sent free upon request.




Economy in Placing Concrete in the Basement Construction of a Large Building

The great economy of the use of the small concrete mixers in large foundation work was very clearly demonstrated in constructing the foundation for the new building of the Methodist Book Concern, now nearing completion at the corner of Rush and Superior Streets, Chicago.


This building is designed to house the publication department of the Methodist Episcopal Church in this district and is one of the highest type of reinforced concrete construction thruout, all floors being of reinforced solid slab concrete. The building occupies a ground area 125 feet square facing the two streets and extending to an alley in the center of the block. By excavating to the curbs, the basement was extended 17 ft. beyond the building line on one street and

(Continued to page 212.)



THAT WOOD CORE

is responsible for the many desirable qualities of



Trade Mark Reg. No. 94745

Consider first, of course, its chief use as a wall lining, and why, because of its wood core, it is **better** in every way than lath and plaster, stronger, more durable and sanitary.

Besides it has a 101 other uses, such as:

- lining summer garages and outdoor sheds for warmth.
- lining summer cottages (helps keep them cool).
- quick repair partitions.
- enclosing rooms in attic or cellar.
- building dust proof closets or cabinets.
- panels in wainscoting or beamed ceilings.
- shelves, drawer bottoms, cabinet backs, etc.

Sold by dealers everywhere.
Write for free sample and interesting booklet.

The Compo-Board Company
5777 Lyndale Ave. No. Minneapolis, Minn.



BAYONNE

Used
On All the Porches

Gedney Farm Hotel,
White Plains, N. Y.

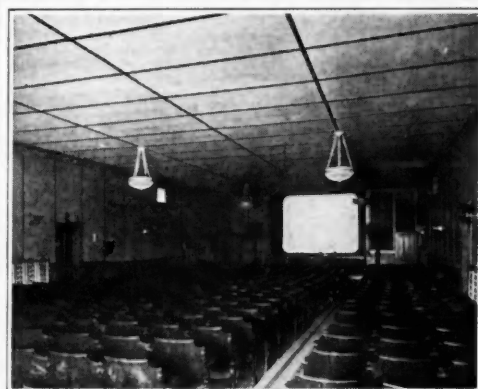
Builders and contractors give preference to BAYONNE where wearing qualities, clean finish and economy are essential.

BAYONNE

gives complete satisfaction where other prepared materials and even metal coverings fail. It is the simplest covering to lay; tacked only on the edges after spreading on the **dry boards** (no setting in wet paint). Does not shrink, expand, buckle or crumble. It **stays flat**. Never leaks and stands any amount of hardest wear. One coat of paint is sufficient for ordinary uses.

Hundreds of letters from contractors all over the States prove BAYONNE'S superiority. Write for sample Book "N" giving prices and laying instructions. See Sweet's, Page 539.

John Boyle & Company, Inc.
112-114 Duane St. 70-72 Reade St. NEW YORK CITY
Branch House: 202-204 Market St., St. Louis



Hard, Stiff, Waterproof and Sized

Try to bend a piece of it. Whittle it.

Drop water or ink on it. Rap it on your knuckle.

Then you'll understand how PLASTERGON WALL BOARD differs from all other boards.

PLASTERGON WALL BOARD

The chemically treated wall board that does not shrink

For every kind of building, PLASTERGON WALL BOARD is best because it is absolutely dependable. It is hard and stiff enough to lay smooth over studs and joists **WITHOUT WAVING**.

Dampness has **NO EFFECT** on it and the waterproofing not only lumberizes the board but also sizes it, saving you from \$4.00 to \$6.00 per thousand.

BUT DON'T TAKE OUR WORD FOR THIS. Get samples of **WATERPROOF** Plastergon, test them and then order some of the board. The price will surprise you. Send today.

PLASTERGON WALL BOARD COMPANY, 101 Fillmore Ave., TONAWANDA, N.Y.

Building Books Absolutely Free

Postage Prepaid

Your Choice of Any One of Twenty Building and Plan Books

Write for Descriptive Circular Telling About Our Great FREE Offer

AMERICAN CARPENTER AND BUILDER
1827 Prairie Ave., CHICAGO

U. S. Patent No. 1134662

The Latest Word in Kitchen Convenience

Wall Ironing Board

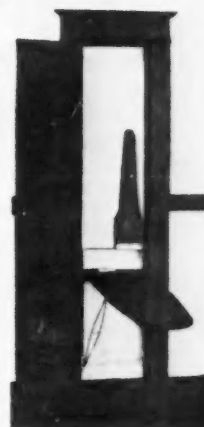
Simple in Operation
Perfectly Rigid
No Springs to Break
Adjustable to Three Heights
Complete, Board, Sleeve Board
and Holder
Goes in between 2x4 Stud

Full Information

Kitchen Fixture Co.

Box 503

Everett, Wash.





Standard Mixers in Use on Methodist Book Concern Building.

20 ft. on the other.

The great portability of these mixers enabled them to be readily moved along the work on the two streets and the alley sides of the building and the depth of the basement permitted the spouting of concrete a considerable distance. By moving the mixers along in this manner, all of the concrete in the retaining walls on the two streets and the alley sides and a considerable part of the concrete in the inner retaining wall was spouted from the mixers directly into the forms.

For constructing the pier foundations the mixers were placed close to the retaining walls and moved along the two street and the alley sides as the work progressed. Placed in this position, it was possible to spout concrete directly from the mixers of a lateral distance of 20 ft. This permitted all concrete in two rows of pier footings on the two street sides and three rows of footings on the alley side to be spouted from mixers direct to forms. For constructing the center pier footings, concrete was spouted into bins from which it was gated into carts for delivery to the forms, but the portability of the mixers enabled them to be so placed that it was necessary to wheel very little concrete a distance greater than 50 ft.

The two wide sidewalks on the street sides of the building were also constructed with these mixers by moving the machines along as the work progressed and spouting much of the concrete into place.

The architects of this building are Wheelock & Shank, 1108 Schiller Building, Chicago. The engineers are Ramsey Engineering Co., 327 S. La Salle St., Chicago, whose system of reinforcing was used. The general contractors are Abraham Lund Co., Y. M. C. A. Building, Chicago.



Reduction in Price of Kawalle Automatic Mitre Box

The Kawalle Automatic Mitre Box Company announce that they are making a reduction in the price of their mitre box and they have given several reasons for doing this.

There has been a considerable demand for this ingenious tool for the past few months which has allowed the company to improve their manufacturing facilities to a large degree. This improvement has made it possible for this concern to reduce the price of their product. The Kawalle automatic mitre box will be sent to any of our readers for ten days' free trial and can then be returned if it does not do the work claimed for it. The address of the makers is 502 N. Ninth Street, Manitowoc, Wis.



**An Ounce of Prevention
SNOW GUARDS**

prevent snow sliding off the roof, tearing away and damaging gutters and injuring passers-by. They are easily and quickly applied — low in cost. They are damage-suit insurance. For old or new roofs. FREE SAMPLES together with various styles and prices on request.

CLASON METAL WORKS

"Clason" Guard for New Roofs
Providence, R. I.

SLATE WE HAVE WHAT YOU WANT

*In Roofing Slate. Slate Blackboards
Structural and Plumbers' Slate*

**SATISFACTION GUARANTEED IN QUALITY AND PRICE
ASK FOR DELIVERED PRICES**

J. K. HOWER, Station, C., Danielsville, Pa.

R. J. KICHLINE, Sales Agent



Indestructible Roofing

Cover your buildings with Montross Metal Shingles and save yourself time, money, worry. Economical in price and easily laid. Our booklet, "The Best Roof Under The Sun" will make you a roofing expert. Free on Request.

AGENTS—MAKE MONEY

On our profit sharing inducement to all reliable live wire dealers. Write for information, how our agents are growing rich handling Montross Metal Shingles. Big demand. This is your chance. Don't overlook it. Testimonial letters and affidavits cheerfully given.

MONTROSS METAL ROOFING CO., 102 Erie St., CAMDEN, N. J.

ROOFING SLATE SINCE 1869

Miners, Makers and Shippers of all Styles and Colors of Roofing Slate. Write for Prices.

RISING & NELSON SLATE CO.

Main Office: West Pawlet, Vt.

Branch Offices:
1058 Marbridge Bldg., New York City. 4 Post Office Sq., Boston, Mass.
Office and Yard, 2554 W. Harrison St., Chicago, Ill.

ROOF SLATES

STRUCTURAL SLATE BLACKBOARDS

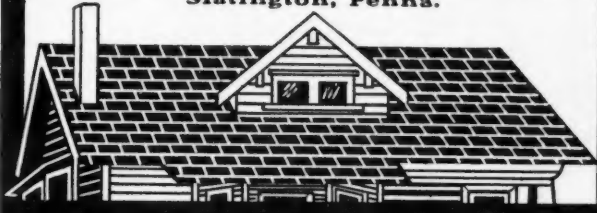
E. J. JOHNSON
38 Park Row New York
Quarry Operator
BLACK, GREEN, PURPLE, RED

Booklet, Samples and Prices on Application

UNFADING ROOFING SLATE and Slate Blackboards

*Best to be had and made in
Slatington — Buy from us*

Slatington-Bangor Slate Syndicate, Inc.
Slatington, Penna.



ROOFING SLATE

Free Samples

of the famous G F T Slate-Roofing will be sent on request to all Carpenters and Builders for comparison on Quality, Appearance and Prices.

G F T Roofing-Slate stands alone in a combination of Durability and Beauty at a most reasonable cost. Write for Free Samples today.

Slatington Slate Co., Inc.
Slatington, Pa.



THE ROCK OF AGES CLEFT FOR YOU

RED GREEN PURPLE BLACK SHELDON'S SLATE

THE ROOF FOR AGES ALWAYS NEW

ECONOMICAL — ARTISTIC — FIREPROOF

Outlast the building. First cost, only cost. The only roof you can afford to consider for a permanent investment. Artificial substitutes bring endless expense for upkeep. Post a postal and get posted.

F. C. SHELDON SLATE CO., Granville, N. Y.

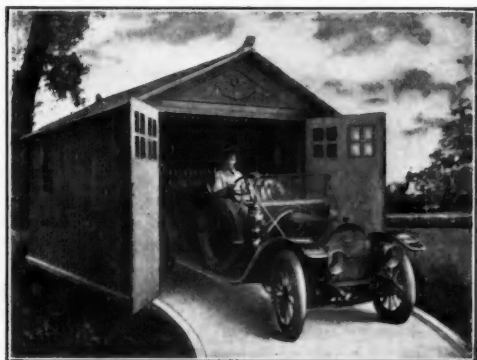
The Walter's and Cooper's Zinc Coated Metal Shingle

is coated or plated after stamping, so that every last possible spot where deterioration could start has a rich, heavy, zinc coating. The result is: Walter's and Cooper's Interlocking Metal Shingles are practically indestructible under all climatic and weather conditions. Roofs covered thirty years ago are as good now as when first put on and have never caused a cent's worth of expense in renewals or repairs in all that time. Roofing contractors make a very handsome profit handling these shingles. Ask for particulars.

National Sheet Metal Roofing Co.
339-345 Grand St., Jersey City, N. J.



YOU'RE MISSING A BET MR. CARPENTER IF YOU ARE PASSING UP THE METAL SHELTER GAME



IT'S THE BEST BET YET

The METAL SHELTER Agency gets you more business, more customers, more work for your men, more money for you, better and quicker results, and—get this—

A REAL BUSINESS OF YOUR OWN

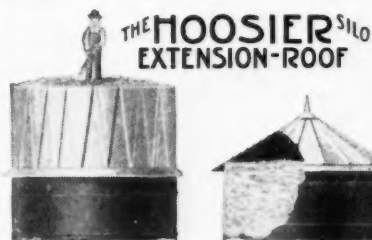
Don't wait. Get the agency for Metal Shelter Garages, Cottages, Bungalows, Stores, etc., before the other fellow beats you to it. You can sell 'em, and it's a cinch to set 'em up—a building a day. THINK! Investigation costs you nothing. Write right now.

Metal Shelter Co., Inc.

Whitehall Bldg. — New York City

Sell The Farmer

A big, profitable business is at your door. You can help the farmer make more money—at the same time make big profits yourself. There will be more silos erected in 1916 than ever before. Every owner and prospective builder of a silo is in the market for



Co-operation

The farmer knows the merits of this wonderful roof. We have advertised in the leading farm papers for years. We are going to keep it up. We will do everything possible to help you.

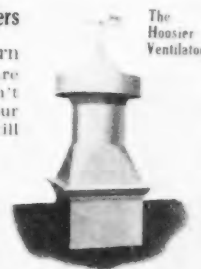
Thousands Now In Use The only way of filling a silo to its capacity. Think what one-fourth more silage means to the farmer. It will surprise you how easily and quickly this remarkable roof sells. Costs less than the impractical wooden roof. Lasts a lifetime.

Special Proposition to Carpenters and Builders

Send today for full particulars. Learn how you can make big profits. You are the man to sell this great silo roof. Don't erect a silo until you know all about our offer. We have some choice territory still open.

Write today

**Sheet Metal Specialty
Company** 702 N. Y. Street
GOSHEN — — — — — IND.



Can You Recommend a Man?

WE are looking for a man in your neighborhood—unless the right man has *already* applied.

\$5,000 to \$10,000 a year earnings must not be beyond his ambition.

BUT he must be willing to work hard, to overcome obstacles, and most of all, to be able to look a *new* proposition in the face and judge it on its own merits.

FURTHERMORE, he must be willing to back his judgment by spending for his own equipment \$150 to \$5,000—the amount varying with the extent to which he wishes to take up the business.

ON this investment, he should after several months of real work, begin to earn *not less than 10% a month*, which rate should not only remain steady, but should steadily increase.

OUR seven years' experience has shown that two kinds of men are most successful with the Norwalk Vault proposition:

a—The man already doing well in business, whose business, however, is not developing rapidly enough to suit him, or has slow seasons at one time or another.

b—The man who wants to go into business for himself, but has so far seen nothing really worth while within his reach.

TO the man already established it offers a side line that, given half a chance, will soon outgrow his main business. 18% increase in profits is not abnormal in a case of this sort; a man now making only 6% should, by adding the Norwalk Vault proposition, clear 24%, and a firm with enterprise enough to clear 20% on its present business should easily increase its profits to 38% at least.

TO the man just starting out for himself it offers an opportunity—on a cash outlay astonishingly small compared with the possible returns—to get in on the ground floor with a great national organization with an established, trademarked article, and with no competition worthy of the name. Whatever business such a man builds up is *HIS*—nobody can take it away from him and no changing fashion or season can affect it.

ON the other hand, this is neither an experiment nor "get-rich-quick" game in any sense. There is a perfect gold mine of business on all sides *waiting*, but it takes a fairly good man to cash in. If you know such a man, then show this advertisement; if *you* are the man, write yourself.

YOU may have all the details without the slightest obligation. Our sales and office force are paid to answer your questions, frankly and willingly. You may see maps, figures, costs, photographs, letters from successful manufacturers, etc. Unless you are the right man we don't want to do business on any terms, and naturally you will feel the same about us. Therefore the more questions you ask, the better. If the thing sounds reasonable to you, please address

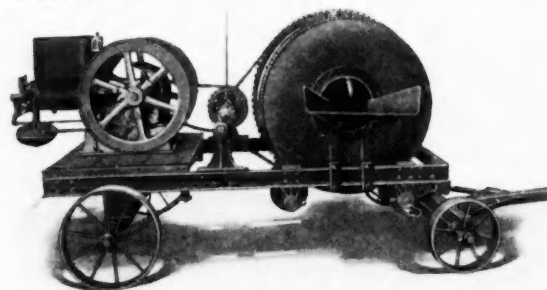


The Norwalk Vault Company
40 Seminary Avenue Norwalk, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

Good Mixers at a Low Price

The constantly lowering prices of many of the machines of various kinds in use today is caused by efficiency systems which have made economical production possible. If the manufacturer can cut his cost of production either by going into the making of his product on a large scale, or by adopting efficiency systems, he can afford to sell it to the consumer at a lower cost.



The Interstate Mixer is Furnished at an Unusually Low Price for a High-Grade Mixer.

The concrete mixer illustrated here is being sold at a very low price, which has been made possible, the makers say, by the large output and economical production. The Interstate Equipment Co. also say that they have not sacrificed any labor-saving devices or quality in the production of their machine.

Their prices on their styles of mixers and full descriptions can be obtained on request. The address of this concern is 1745 Ernsperger St., South Bend, Ind.



A New "New Way" Engine

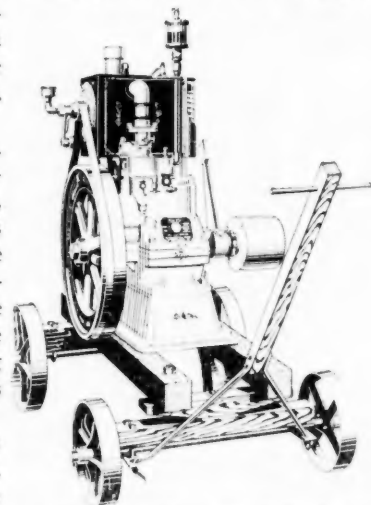
Contractors and builders in general will be highly interested in the engine of special design recently brought out by the "New Way" Motor Company, of Lansing, Mich., and shown here mounted on hand truck.

What makes this type of engine of especial value to the builder, is the fact that its extremely light weight, simplicity and reliability make it possible to move the engine quickly from one job to another. Built in 4, 4½, 6 and 7½ horsepower, it gives a range of sizes covering practically all needs.

The engine is in keeping with established "New Way" quality having cylinders ground and polished to the 1/1000 part of an inch. The carburetor is provided with a screen over the air intake which excludes dust, chaff, shavings, etc.

High tension ignition, same as is used on automobiles and aeroplanes, has been chosen for this engine so as to insure absolutely reliable, dependable ignition the year round, without the necessity of bothering with worn out batteries and spark coil.

This engine, due to its direct cooling feature, found exclusively on the "New Way" engine, can be left running, without attention, either during the coldest winter weather or hottest summer weather without fear of damage from frozen and bursted cylinders or of running dry, scarring cylinders and melting bearings.



The New "New Way" Engine Mounted on Truck.

(Continued to page 216).

Own a Factory like this You Can

**We
Built
This Factory
Paid For it
In 3 Years**

**We will furnish
Equipment Free**

ANY AMBITIOUS MAN OR WOMAN SHOULD SUCCEED

Requires no experience—We start you in business in your own town. Show you how to grow prosperous in the canvas glove business. THE DEMAND is enormous—continuous—never failing—everybody—everywhere wears canvas gloves—the farmer—mechanic—doctor—lawyer—the laborer—MILLIONS of canvas gloves are required to supply the demand—they have revolutionized the glove industry.

THERE IS A MARKET right in your locality—you can supply it. Every merchant and storekeeper for miles around will buy their canvas gloves from you—they want to patronize home industries—you can meet competition—sell as cheap or cheaper than they can get elsewhere—Besides we furnish you names of over 700 jobbers and dealers who buy canvas gloves.

YOU CAN START making money from the beginning—Profits are immense. Cost of production and maintenance of business, small. We borrowed money a few years ago—to start—began with two sewing machines—Today we employ many men and women—Have become independent and prosperous.

OUR GREAT FREE OFFER
We furnish the tools FREE—assist you to start a factory—co-operate with you to successfully conduct the business—give you the benefit of our experience—make it almost impossible to fail.

You become in reality A BRANCH of the McCreery Mfg. Co.—Working independently—we furnish the raw materials—you turn out the finished product—reap the profits.

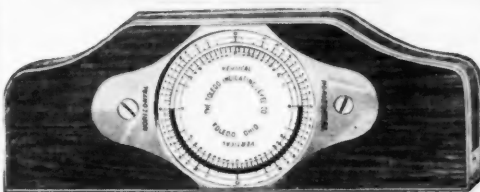
There are no strings to our offer—you are not bound by any contract to buy from us—only a man to man agreement—that so long as our prices are as low or lower than you can get elsewhere you will buy of us—that's all.

Full information is yours for a post card—Send it Now.

McCREERY MFG. CO.

1036 Front Street

Toledo, Ohio



**HUMAN-LIKE
IN ITS
WORK
AND
EFFICIENCY**

IT TALKS
THE FIERY RED INDICATOR

Mr. Mechanic:—

THIS IS THE LEVEL THAT TALKS

Lay aside your old spirit level. It has had its day, and is too slow and inaccurate for modern construction work. You impair your efficiency by the use of out-of-date tools. Acquaint yourself with the wonderful aid that a **Level That Talks** will be in your work.

Needs No Adjustment

The Toledo Indicating Level requires no adjusting. The indicator of the Level is securely fitted into the stock. No chance of the Level ever getting out of order or adjustment. Strongly and rigidly constructed; practically unbreakable.

Carpenters, Contractors, Builders, Masons and Mechanics everywhere unite in saying the Toledo Indicating Level is perfect.

There's no guess work. Simply adjust your work according to the indicator and you're through. No further testing—the work is **right**. One move instead of a dozen. Especially efficient for all kinds of roof and cement work.

EASILY READ IN ALL PLACES

Dial is made of heavy white frosted glass, on which all lines and figures are in blue enamel, very clear cut, making it easy to read in dark and out-of-the-way places. The red indicating fluid is shown only between circular lines and tells whether work is at a desired angle or not. If not at the desired angle, it will tell accurately just how much it is off per foot.

	Price		Price
No. 105—24 in. long.	\$5.00	No. 106—30 in. long, all brass bound.	\$6.50
No. 105-A—24 in. long, all brass bound	6.25	No. 107—30 in. long.	5.25

TOLEDO INDICATING LEVEL CO.
1941 Nicholas Bldg., Toledo, Ohio.

Write for Our Circular.

Gentlemen:—Please send me, without cost or obligation on my part, a full size photograph and further particulars of your Indicating Level. Also advise me if you will appoint me as your representative at this place.

Name

Address



K & E Architect's Levels

in a variety of types (plain and convertible), also **K & E Builder's Transits**, are intended for discriminating builders, contractors and architects who want instruments that are made right, will wear well and do good work. Our instruments satisfy these requirements, besides being low in price. Consequently you are sure of getting full value when you buy one of our transits or levels.

Write for our Catalog F-35

Our **FAVORITE FARM LEVEL**—for the Farmer, Landscape Gardener, Builder, Roadmaker—is a **WINNER!** Ask for Circular F-1326.

KEUFFEL & ESSER CO.

NEW YORK, 127 Fulton St. General Office and Factories: Hoboken, N. J.

CHICAGO 516-20 S. Dearborn St. **ST. LOUIS** 813 Locust St. **SAN FRANCISCO** 48-50 Second St. **MONTREAL** 5 Notre Dame St., W.
Drawing Materials, Mathematical and Surveying Instruments, Measuring Tapes

The "New Way" people have also equipped this engine with splash system of lubrication. The operating parts work constantly in an oil bath. This does away with the numerous oil holes which often fill up with dust and grit, then when the oil can is used, the dust and dirt are washed into the operating parts, cutting and scratching the vital wearing surfaces.

This type of engine is especially suitable for the builders' needs, because: *First*; it can be started quickly by any workman; *Second*; it can be left alone without attention, hour after hour, and in any kind of weather; *Third*; one man can move it quickly from one point to another, which means economy and cuts costs; *Fourth*; there is an entire absence of gasoline pump; therefore nothing to leak and invite fire on the job; *Fifth*; it uses no water, which is an advantage as it saves the cost of labor of constantly re-filling and oftentimes water has to be hauled over a considerable distance.

The "New Way" Motor Co. also manufacture a very extensive line of vertical and horizontal engines mounted on skids, or trucks and are constantly on the lookout for any features that are of value to the contractor and builder with whom time and labor means money.



"Rex" 6 and "Rex" 10 Mixers

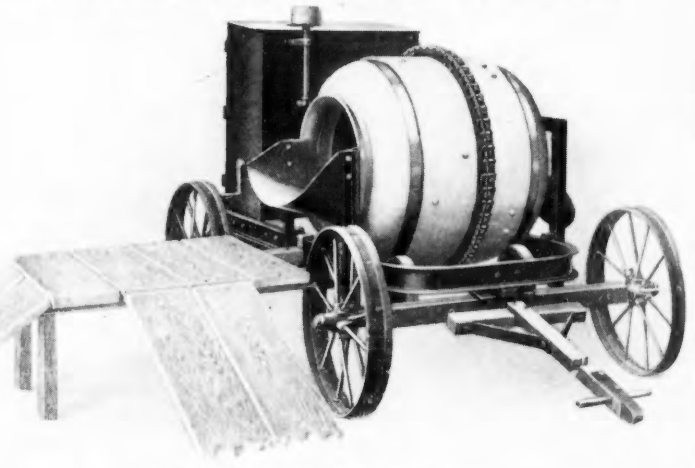
A bulletin has been recently issued by the Chain Belt Company showing two sizes of "Rex" mixers that are particularly suited for general contracting. The two mixers described are known as the "Rex" 6 and the "Rex" 10. The "Rex" 6 has a capacity of 6 cubic feet of unmixed dry material or 4 cubic feet of mixed concrete per batch. The "Rex" 10 has a capacity of 10 cubic feet of unmixed material or 7 cubic feet of mixed concrete per batch.

Both these machines are built along the same general lines except for the difference in size. The larger can be had with three different types of power, either steam, gasoline or

electricity can be used. The 6 is furnished with a gasoline engine.

The loading for either type is generally taken care of by a charging hopper tho the 10 can be had with a power loader.

The bulletin shows several large jobs in the process of construction in which "Rex" mixers were used and also contains complete details of the various materials that go into the making of the mixer. The description of the make-up of "Rex" mixers gives the prospective buyer an opportunity to find out what he may expect from the mixer under all kinds of service conditions. A careful study of the specifications of a mixer affords a fine insight into the construction



"Rex" 6 Low Charging Mixer.

and gives the reader a chance to estimate the durability and strength of the machine.

Copies of this bulletin can be obtained from the Chain Belt Company, Milwaukee, Wis. The descriptions and specifications of "Rex" mixers will be of great interest to any one connected with the contracting field.

"MILCOR" GALVANIZED BARN CUPOLAS



No. 775

MILWAUKEE CORRUGATING CO.

Branch at
Kansas City, Mo.

Made of galvanized steel with bird screen and lightning rod attachment.

The corrugated weather shield is riveted and the corrugations not only add strength but add to the attractiveness of the cupola.

"MILCOR" Barn Cupolas, on account of their scientific construction, are endorsed by leading architects and engineers.

The Stamped Shingles are very ornamental.

MILWAUKEE,
WIS.



Model "C"
Brass, Bronze
or Nickel
\$2.25

Just a Word to Your Customers—

and the Wallace Portable Collapsible Lamp is practically sold—with a nice profit for you.

All you have to do is demonstrate the lamp, and nine out of ten among your customers will buy it. It's so handy—

Stands, hangs, clamps or sticks any place—at any angle and when not in use folds up into a compact ball. Made in Brass, Bronze or Nickel, and reasonable in price.

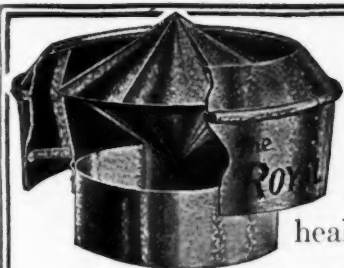
You can appreciate its advantages, and so will your builders.

Drop us a postal today for our liberal proposition.

WALLACE NOVELTY CO.

19-25 E. 24th Street
NEW YORK





Proper Ventilation

Good air is essential to the good health of stock. Specify

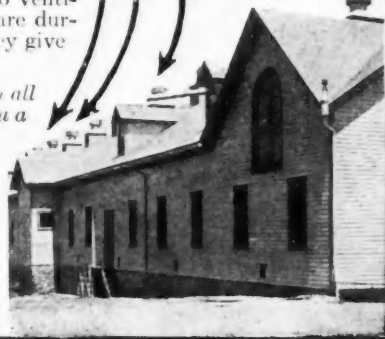
Royal Ventilators

for all of your farm buildings, and rest assured of efficient ventilating service.

Royal Ventilators are made of the best materials by ventilator specialists. And they are used the world over, because they do ventilate; because they are durable; and because they give the best of service.

We make ventilators in all styles. Let us send you a catalog of our complete line.

Royal Ventilator Co.
417 Locust St.
Philadelphia, Pa.



The ventilator that stands out above all others in Service, Durability and Economy is the

"GLOBE" VENTILATOR

GLOBE Ventilators are built up to a standard, not down to a price—the same standard for 35 years. They are in use generally throughout the country on large dairy barns and creameries, on smaller barns and dwellings where proper ventilation is required. Let our service department help you solve your ventilating problem. Our booklet "Better Barns" sent upon request to our Dept. F.

GLOBE VENTILATOR CO., Troy, N. Y.

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You can easily make more profit on every barn you build by seeing that it is equipped with

O. K. CUPOLAS

They are the easiest to erect—are shipped ready to install. Absolutely Bird, Storm and Rust proof. O. K. Cupolas sell themselves.

Special prices to Contractors and Builders where we are not represented.

Get these additional profits. Let us show you the way. Full information sent FREE. Write today.

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SOLID FACTS About THE

WILLIS Skylights

You want the best skylights for the money you put into them. Your reputation and your chances for future business depend upon your decision.

When you specify and use the Willis—you are not only playing safe, but adding to your reputation as a reliable and progressive builder.

Made in all styles and sizes, the Willis Skylights give the most light with the greatest possible glass area.

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Willis Mfg. Company

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New Book on Wood Finishing

EVERY architect, contractor and builder is entitled to one of these new books free for the asking. It is a valuable handbook on interior finishing, beautifully illustrated in nine colors.

It tells how to finish inexpensive soft woods as beautifully as hardwoods and gives complete specifications for finishing woodwork and floors with

Johnson's Wood Dye

These dyes are not pore-filling varnish stains but coloring matter that penetrates deeply into the wood without raising the grain.

Johnson's Prepared Wax

is the most extraordinary polish for interior woodwork and floors. It gives a hard, dry, glass-like surface that does not collect dust.

If you are not familiar with Johnson's Wood Dyes and Prepared Wax we shall be glad to send you samples for experimental work or finished wood panels showing the various shades of Johnson's Wood Dye.

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Please send me free and postpaid my copy of your new 25c Instruction Book, "The Proper Treatment for Floors, Woodwork and Furniture."

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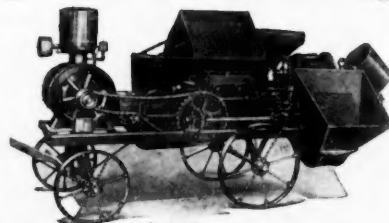
Fill out this coupon and mail to

S. C. JOHNSON & SON
"The Wood Finishing Authorities"
RACINE WISCONSIN

U. S. Standard Block Machines and Concrete Mixers

The strength of a concrete block will depend a great deal on the method of coring. If the cores are taken out in large chunks, there will not be enough cross braces so that the block will stand up on the job.

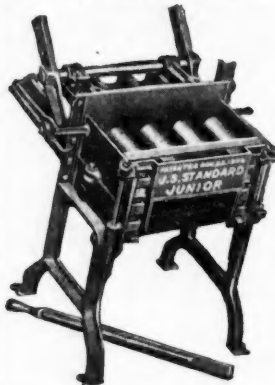
The U. S. Standard Machine is made so that it cuts out small oval blocks every four inches. In this way



U. S. Standard Continuous Mixer.

there are plenty of cross braces and the block made on this machine will be unusually strong. These are face-down machines, that is, the blocks are placed in a horizontal position in the bottom of the mold box. This enables the operator to use a facing material of fine screened sand which is about one inch in thickness, with the rest of the block of coarser material.

The makers of this equipment, The U. S. Standard Manufacturing Co., Ashland, Ohio, also make the U. S. Standard



Small Oval Cores Are Cut Out of the Blocks on this Machine.

Concrete Mixer. These mixers are equipped with an automatic force feed measuring device which the makers say solves the charging problem and eliminates all the inaccuracies and mistakes in proportioning and mixing. You do not have to depend on laborers, who will often make mistakes, as the machine takes care of the proportioning if the hoppers are kept filled. These mixers are made in several styles to fit different conditions.

This concern also handles a batch mixer.

A copy of their catalog will be of interest to any man engaged in the concrete business. It can be obtained by writing to this concern at the above mentioned address.



Building with Improved Methods and Machinery

Down in Newark, Ohio, is a builder who is 87 years old and still in the harness. Not only that, but he is right up to date and is interested in and using modern equipment of all kinds. His name is Eli Hull.

His latest work has been the construction of monolithic concrete houses which have been constructed by the use of steel forms. The exterior walls of these buildings are finished in stucco. For this purpose Mr. Hull has used the Automatic Stucco Machine. In speaking of this device, Mr. Hull said that this machine was destined to revolutionize the building of stucco houses because of the fact that it reduces costs to a remarkable degree in this class of work. This machine is made by the Automatic Stucco Machine Co., 51 E. 42nd St., New York City.

In handling the concrete for the two long rows of houses that Mr. Hull is building, a tower is used to elevate the concrete which is then chuted to place in the steel forms. In placing the stucco a hand machine was used at first but now a 25-foot machine is used. This permits the rapid placing of stucco which is spread out in a uniform layer.

Mr. Hull is very enthusiastic about monolithic concrete

(Continued to page 216.)

PAINT to the average individual is most often simply a matter of color—the general pleasing effect to the eye. To the architect or builder beauty, while of great import, is second to protection. That is as it should be. Both protection and beauty are part and parcel of every job done with

Dutch Boy White Lead

and pure linseed oil. The paint wears well on outside work; its attractiveness lasts with it. Inside, an unexcelled, washable, durable, beautiful finish of any desirable color or texture can be had.



Folders "A" As one interested in painting of the better kind, you will want our general specifications and chart of thirty-nine charming color combinations. Write nearest office for Folders "A."

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ON THE GROUND AS NEEDED

You want to put up your new building on schedule time. That means the windows as well as the other building material must be on the ground when needed.

Fenestra STANDARD UNITS

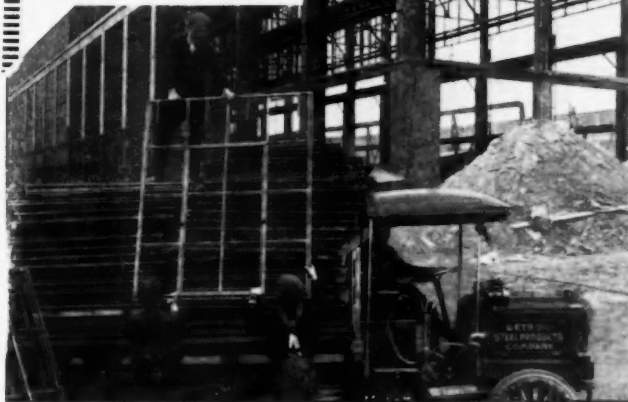
SOLID STEEL WINDOWS
"REG. U.S. PAT. OFF."

can be shipped to you in ten days after receipt of order in Detroit. Thirty-one types and forty-five different sizes give a variety which is sufficient for all ordinary building needs. Undoubtedly you will find among them just the window you want.

Besides prompt shipment, low cost is an additional inducement to use Fenestra Standard Units. They can be purchased at a price that compares favorably with wood sash.

Write for list of stock types and sizes mentioned above.

Detroit Steel Products Company
Dept. B-16 DETROIT, MICH.



San-a-Bestos Stucco

**Fire-proof Damp-proof
Crack-proof**

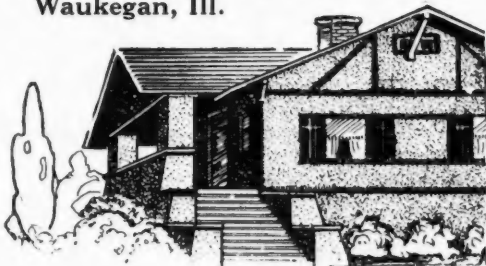
THE most durable and artistic stucco on the market. Presents a distinctive, pleasing appearance and will last for years.

Climatic conditions have no effect on **San-a-Bestos**, and it will look the same in its twentieth year as it does now.

We also manufacture **San-a-Bestos Composition Flooring** at a low cost—the equal of tile, terrazzo or marble.

Write today for information on our **San-a-Bestos Building Products**.

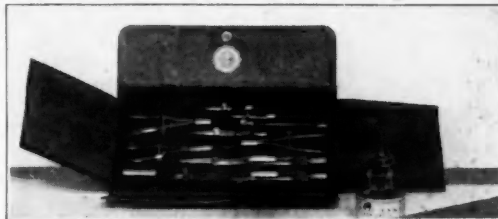
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1017 Lake View Building, Chicago, Illinois

houses and says that they make ideal homes. The impression that they are damp is not true according to him as he says that it has been his experience that they are perfectly dry and sanitary and are warm in cold weather and cool during the summer months.

The Automatic Stucco Machine Co. has made a number of improvements in its machine within the past 60 days. One of the main features is a new phosphor bronze spring, which has been thoroughly tested and has proved entirely satisfactory. This spring is used in throwing the stucco against the wall of the building.



The Lansing "No. 5 Roadster"

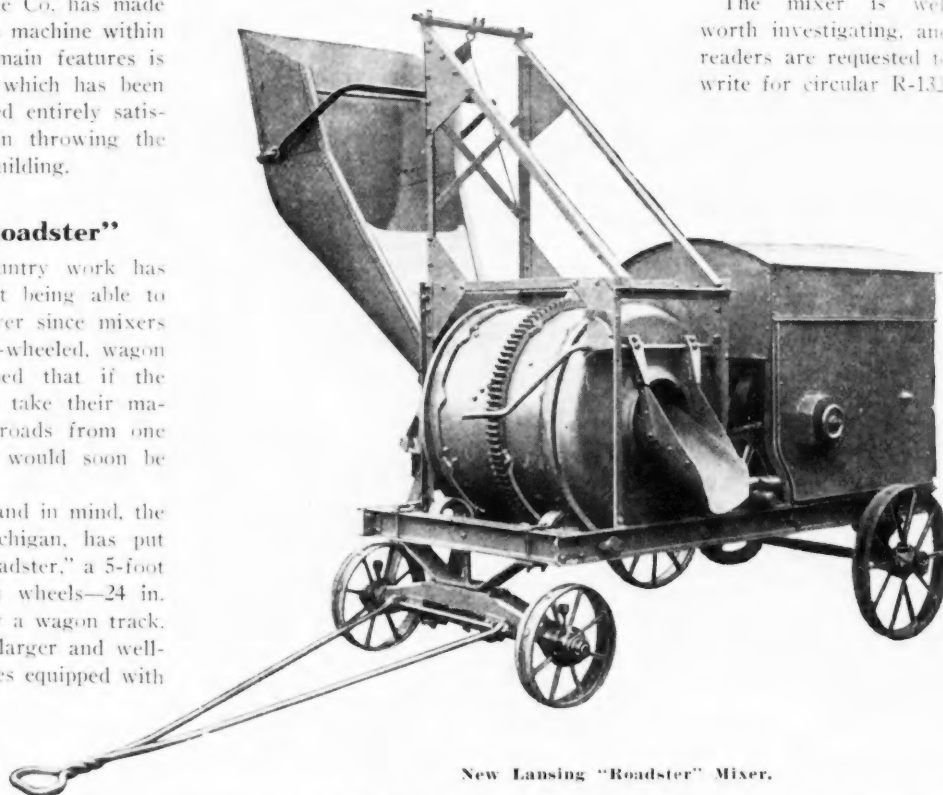
Many a contractor doing country work has been keenly disappointed in not being able to buy just what he has wanted ever since mixers were first made—namely, a high-wheeled, wagon tread mixer. He justly claimed that if the manufacturer of mixers had to take their machines over the rough country roads from one job to another, that his needs would soon be recognized and supplied.

With this ever increasing demand in mind, the Lansing Company, Lansing, Michigan, has put on the market their "Lansing Roadster," a 5-foot split bag machine. It has high wheels—24 in. front and 30 in. rear, that follow a wagon track. It has all the ear marks of the larger and well-known Lansing Mixers, and comes equipped with either side loader or batch measuring hopper, a rotary pump, silo hoist or folding platform. It has plenty of

power and this coupled with a minimum low weight makes it a very desirable machine for country use.

The side loader feature is the opened end type and is said to be the first open end skip ever put on a small side-discharging machine.

The mixer is well worth investigating, and readers are requested to write for circular R-132.



New Lansing "Roadster" Mixer.

Have Up-to-Date FIRE-RESISTIVE EXTERIORS by all means

—but have them so that you do not lose your investment in your good buildings—

Overcoat Them with Metal, Lath and Plaster

The cost is not excessive—especially if you use

"Bostwick Truss-Loop"

We will give you sufficient information to make the work easy.

Send for Bulletin 80 S

The Bostwick Steel Lath Co.

Niles - - - Ohio



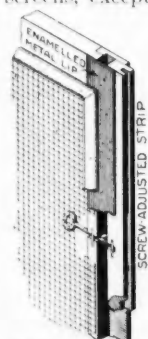
THE WHEELER SCREEN

is truly "Self-Fitting" by its Screw Adjustment

You find three troubles in every non-adjusting screen: (1) Errors of the Opening (no man can make two openings of same size); (2) Weakness of the Wooden slide-tracks used by all sliding screens, except the "Wheeler"; (3) Swelling and Shrinking of all window frames in wet and dry weather.

We End All Troubles

No matter what trouble—whether error of carpenter—or imperfect window frames—no matter what weather, merely push out Adjustable Strip in the side by means of Thumb Screws located near top and bottom. The Screws push out this Strip—more at top—less at bottom—until Screen *exactly fits*. With troubles ended, conveniences follow and the "Wheeler" outpoints all others on all features. To the Contractor they afford *two profits*—the usual margin and another in the *saving over cost of fitting and painting the edges of all others*. They fit without touch of tool at one-tenth the cost of other installations.



Corner showing screw adjustment

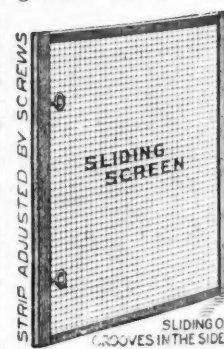
Big Money Selling Our Screens

You can make more money *selling* the "Wheeler" Adjustable Screens than by *making* other screens. Keep your men busy at other work. Let us take care of your Screen orders. You actually make \$5.00 to our \$1.00, because we allow you the big-single profit on each house-order, since that is the only way for us to get the little-many profits on the 100 house-orders.

PROMPT SHIPMENTS:—Special machines—floor space of nearly 2 acres—fill orders in days where others require weeks; speed limited only by time for drying the finish specified—3 to 5 days is our average on White-Pine-Painted Screens.

If we have no Agency in your town, write for our proposition; don't delay—Screen time is soon here.

WHEELER SCREEN CO.



SLIDING ON GROOVES IN THE SIDES

Geneva, Illinois



Eliminates Furring

Grimm's Galvanized Corrugated Wire Lathing

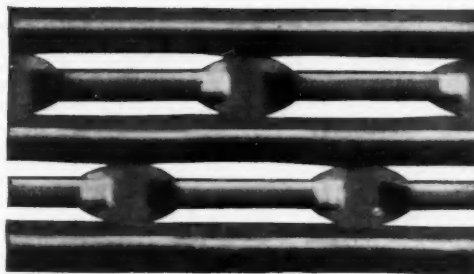
Here is the best Metal Lath obtainable. It requires no furring the V-shaped corrugations keeping the lath clear from the wall and forming a dry air space. These same V-shaped corrugations make the lath stiff and rigid without adding excess weight. This Galvanized Wire Lath when applied to the walls or ceilings with galvanized staples makes the most durable and economical wall to be had. It is especially efficient to apply directly over clapboards, where it is desired to give an old building the appearance and durability of an up-to-date stucco building.

We have prepared a special booklet on Wire Lathing. It shows detailed views, and the perfect laying facilities of wire lath. We'll send you a copy FREE. Write for Booklet 61-B.

Buffalo Wire Works Co., 413 Terrace, Buffalo, N. Y.
(Formerly Scheeler's Sons)
Branch Office and Warehouse: 11 South 7th St., Philadelphia, Pa.



This Exclusive Design — Found Only in Sykes' Trough Lath Gives You Money-Saving Advantages



For Interior Work Sykes' Trough Lath is the best, not only because it is strongest, but also because it is as easy to plaster on as wood lath, and is very economical in amount of mortar used.

For Ceilings, Mantel and Tile Setting, Sykes' Trough Lath will give both builder and owner the greatest value. It saves time and money. It insures permanent strength.

Furnished painted black. Free sample and prices on request.

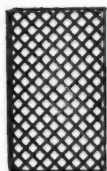
When you use Expanded Metal Lath, choose SYKES'

Expanded Cup—the Self-Furring Metal Lath that saves 5 to 10 cents a square yard—no furring strips needed.

Write us now for Book of Specifications for Stucco on Metal Lath and for sample of Sykes' Expanded Cup Lath—both free.

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Wire Window Guards



Counter Railings
Elevator Enclosures
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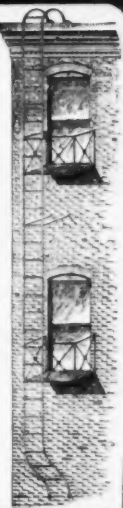
The Cincinnati Mfg. Co., Cincinnati, O.

Get a Copy of the BARBEE BOOK

It Contains 147 Pages of Builders Iron and Wire at Lowest Prices

Every Builder who values Highest Quality and reasonable prices should have a copy of this book. It shows the entire BARBEE Line. A partial list including Skylight Guards, Weather Vanes, Window Guards and Grills, Plain and Ornamental Fencing and Gates, Sidewalk Grating, Stable Fixtures, Cast Iron Posts, Pipe Railings, Office Railings, Wickets, Partition Railings, etc. Radiator Guards, Step Railing, Steel Stairways, Fire-escapes and many other items. You'll find them all listed and illustrated in our large catalogue.

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Collapsing Gates

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Dow Wire & Iron Works
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Plate K1007, Kohler enameled one-piece sink, with right-hand drain-board

The KOHLER trade-mark appears on every piece of KOHLER enameled plumbing ware. It is incorporated in faint blue in the enamel, at the point indicated by arrow.

A KOHLER SINK

will add to the attractiveness of any kitchen

KOHLER trade-marked sinks have no joints or cracks to gather dirt or make cleaning difficult.

A KOHLER sink will add attractiveness to any kitchen, and make a special appeal to every housewife.

The KOHLER trade-mark is a guarantee of the highest quality, and prevents substitution of inferior ware.

Choose KOHLER Enameled Plumbing Ware for bathrooms

The "Viceroy" built-in bathtub is something new in enameled plumbing ware. It is cast in one piece and has many other features that make it notable.

It is enameled all over; full size; 24 inch width inside; 3½ inch roll rim; lightest tub of its class and design; low price, due to manufacturing economies.

Your dealer will be glad to show KOHLER trade-marked, enameled plumbing ware and quote prices.

Write for our "Viceroy" book.

MAKERS
OF
Enameled
Bathtubs,
Lavatories,
Sinks,
Etc.

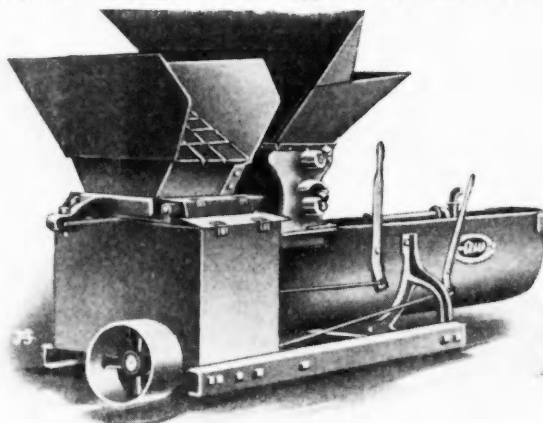
"It's in the Kohler Enamel"
KOHLER CO.
Founded 1873
Kohler, Wis., U.S.A.

BRANCHES
Boston
New York
Pittsburgh
Chicago
San
Francisco
London

The "Grand" Concrete Mixer

The most important part of the continuous mixer is the feeding device. Since the proportioning is taken care of automatically, the machinery that handles this work must be so designed that it can be absolutely depended upon.

One of the features of the mixer shown in the accompanying illustration is the arrangement of the feeding device. The sand and the gravel or crushed stone are fed into the trough by movable hoppers that push in a certain amount. These hoppers can be regulated so that any desired mix can be obtained. The cement is fed in thru a stationary hopper which is equipped with an agitator to prevent the cement from clogging. In the bottom of this hopper is a pocketed cylinder.



Continuous Grand Mixer Mounted on Skids.

As this cylinder revolves, the pockets are filled with cement which is then emptied into the trough after the cylinder has turned over. The amount of cement used is thus regulated absolutely.

The "Grand" mixer shown here is mounted on skids, which is one of the best ways of equipping a mixer for use in block, brick, and tile plants. This same mixer can also be had mounted on a truck for general contracting work.

The Hall-Holmes Co., 254 Oak St., Jackson, Mich., are the makers of this mixer and our readers can secure full information as to prices and types on request.

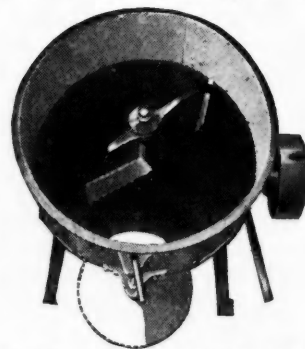


Mixing Done in Plain Sight of Operator

There is no top, or cover to this mixer, view of which we show. The mixing chamber is built in the shape of a tub and is stationary. The arms—one traveling at the outside edge of the drum and the other in a smaller circle near the center—shove the batch around by means of flat blades set at an angle with each other.

Unloading is done automatically. A door is set into the bottom of the drum, operating on a pivot. A turn of the pivot handle and the revolving shovels throw the mixture out thru the door. The trucks, or skids, on which the mixer is mounted are high enough to permit a wheelbarrow being placed under the discharge door. Even at that the drum is so low that loading is not hard.

For the tile or block maker who requires a semi-dry mixture, this machine is especially valuable. The fact that the batch is always in sight, and that the operator may even feel the mixture makes it easy to keep the moisture exactly



In the Frank the Mixing is in Sight of the Operator.

(Continued to page 224.)

Winter Profit!

ARE YOU GETTING YOUR SHARE?

A Contractor says: "I made \$500.00 last year out of this business."

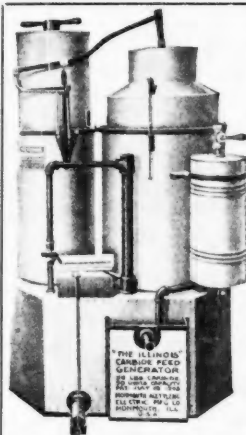
You can do as well.
Sell DAVIS light plants for country homes.
Used all over the world for fifteen years.
We help you sell.

NO INVESTMENT ASKED

The proposition does not ask you to risk your money on our goods.
It is our business to help you sell and we do.
Ask for full description of plan.

Davis Acetylene Company

90 Prospect St., Elkhart, Ind.



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that are Safe, Simple, Reliable and Efficient

Illinois and Monmouth Pit Generators

represent the pinnacle of Perfection in Lighting Systems. Their convenience and fine lighting facilities are appreciated by every rural resident. They are very easy to sell and yield you a handsome profit. We give Carpenters and Builders special Prices and Discounts and help them close sales by sending all prospects, handsome booklets and literature showing the desirability of our Generators.

Simply send us the names of persons who might be interested; we'll work together and you act as our direct agent installing and selling them. In the meantime learn more about Illinois and Monmouth Generators by reading over our Catalogue and Proposition—Write

Monmouth Acetylene-Electric Manufacturing Co.
Dept. AB. MONMOUTH, ILL.

You simply Push-



the Button -

No Engineer — No Large Battery

The Bruston Automatic Electric Light plant, for country homes, churches, hotels, small towns, etc., is absolutely automatic.

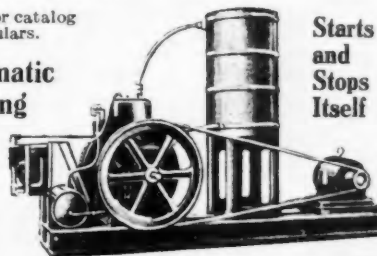
Generates current from 50% to 75% less than rates usually charged by lighting corporations. Over a thousand in successful operation.

We have a special proposition for Carpenters and Builders in small towns and country districts to install and sell the Bruston Plants at a good profit.

Write to us now for catalog and further particulars.

Bruston Automatic Electric Lighting & Power Company, Inc.

126 Liberty Street
NEW YORK CITY



Starts and Stops Itself

Satisfy Your Customers

Build with **SEIPPEL'S** Quality Lumber

GET MORE CONTRACTS
Your interest as a contractor and builder lies in satisfied customers. But your good work is wasted if you build with poor stock.

It takes quality lumber to build a quality house.

Our lumber is all carefully graded up to the manufacturers' grading specifications; and with our enormous stock we fill your order exactly, item for item—no trouble-making substitutions in dimensions or quality.

We carry everything you need, including roofing and mill work—all guaranteed high quality.

Remember: We pay all freight charges, no matter how small your order.

If you're in the market for a carload, come to Dubuque and let's talk it over. We'll refund your railroad fare both ways and you select what you want.

BESIDES, we have a special proposition in which you'll be interested.

We'll save you money on small orders, and guarantee satisfaction.

Write us at once. Place yourself in position to make more money during this building season.

Orders solicited only from Iowa, Illinois, Southern Wisconsin, Indiana, Northern Missouri, Southern Minnesota, Southeastern South Dakota.

PETER J. SEIPPEL LUMBER COMPANY
212 S. Locust Street DUBUQUE, IOWA

OUR DUX BAK ROOFING has no equal in the market for the money. Sells for less and is backed by a longer guarantee than any other standard goods.

Money to Loan

We make loans in amounts of \$150,000 and over, on properties in the larger cities of the United States. (Fee or long term leasehold.)

We specialize in loans on—

Office buildings,
Hotels,
Industrial plants with heavy land values, occupied by prosperous corporations,
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We make these loans in the form of First Mortgage Serial Bond issues.

Ample equities required. Construction loans a specialty. Immediate action on all applications. No loans considered under \$150,000.

S.W. STRAUS & Co.

ESTABLISHED 1882
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MORTGAGE AND BOND BANKERS

STRAUS BUILDING, CHICAGO. 5th & HENNEPIN, MINNEAPOLIS. ONE WALL STREET, NEW YORK.

right. The capacity of the machine is one-eighth yard, which may be thoroughly mixed in one minute. Either trucks or skids as mounting may be had. With the trucks, a two-and-one-half horse power gasoline engine is furnished. Transmission is thru a friction clutch. Wearing parts are of crucible steel. The drum and shovel blades are of heavy gauge sheet steel.

The Frank is an interesting machine for the contractor or builder who is in need of a mixer this size. It is said to do splendid work, is economical—in operation-cost, and in first cost, and is very easy to move from place to place. For inside work on large jobs, too, it is a fine buy—taking up but little room. More complete information should be asked of the manufacturer—Frank Manufacturing Company, 241 Century Building, Des Moines, Iowa.



The Sheldon Concrete Mixer

It has been demonstrated time and time again that the way to make money in concrete work of all kinds, whether large or small, is with a mixer. There is only one disadvantage to this idea. Many small contractors do not feel that they can afford to spend the money needed for a mixer. They appreciate its value, but haven't the cash on hand to buy one.

A solution of their problem and a step in the right direction is the Sheldon hand power mixer. It is possible to build this mixer at a very low cost and it is said that very great results have been accomplished with it. The machine can be either secured complete from the maker or the main parts and blueprints can be obtained and the machine built according to the plans. The machine handles 3 cubic feet of concrete and can be either run by hand or by a one horse-power engine. The concrete is discharged directly into the

wheelbarrows by tilting the mixer. The illustration in their announcement on another page shows the appearance of the mixer after it is completely assembled. It can be readily changed over so that it can be operated by power as desired.

The Sheldon Mixer is made by the Sheldon Mfg. Co., Box 3003, Nehawka, Neb. They will make the mixer complete or will send blueprints and the iron parts so that the mixer can be made. Our readers who are thinking of getting away from mixing the concrete by hand will find this proposition worth thinking over.



A Direct Process Black Print Paper

You, no doubt, would appreciate the advantages of a thoroughly good and reliable black print paper. The elimination of negatives and the double bath, with the consequent saving of time, alone obliges you to give this new article a thorough trial.

"Sphinx" Direct Process Black Line Paper is, to the best of our knowledge, the only printing paper of its kind made in America. It should not be confused with the black line papers, heretofore offered. The "Sphinx" is prepared after an entirely different formula. It will give, if handled according to directions, positively black lines, on a pure white background. The exposure, whether to the sun or under the arc, is quick. Not so quick as the fastest blue print papers, but about the speed of ordinary brown print paper.

This Black Line Paper is made in three weights only—thin, medium and extra heavy. The thin is light and strong enough to be used as a tracing (on which corrections could be made with India ink), and from which blue prints can be made.

To parties interested a trial sample will be forwarded and prices quoted, on request by E. Weber & Co., 1125 Chestnut St., Philadelphia, Pa.

THE "BEST" LINE



Hog Waterer
 Stud Sockets
 Coal Chutes
 Crosspools
 Pump Struts
 Foot Scrapers

Revolving Chimney Tops
 Chimney Caps
 Cleanout Doors
 Stock Salting
 Cistern Covers
 Tank Heaters



"Best" Coal Chutes

are well constructed throughout, have a neat appearance in the building, and the cost is moderate. It locks automatically both when open and when closed. Furnished in two sizes and two styles—Glass Door or Solid Cast-Iron Door.

"Best" Stud Socket

is of a very simple pattern. Made in one size and one style—fits all size timbers. Construction is so that when placed in wet concrete it firmly anchors itself. Hole in back permits the placing of reinforcing, such as a bolt, rod or wire if desired. Studding can be fastened with either a bolt in the large hole at the side or by nails at the side and end. We also make a special corner socket.

Write us for circulars on the above "BEST" articles which give fuller information and details. Kindly give us your dealer's name.



Sterling Foundry Co.

8 Avenue A, Sterling, Ill.

The Window Chute



Ready for the Coal Man

For
Your
Coal
Bin

The Window Chute is a selling feature for any Residence or Building.

**THOUSANDS IN USE---
THE VERY BEST**

**If You Build,
Buy, Own**

Be up to date and
Have the World's
Best

Write for
Booklet C



A Light Basement

HOLLAND FURNACE CO. :: Holland, Mich.

World's Largest Direct Installers of Furnaces.



MAJESTIC Coal Chute

Protects the House and Lawn

It prevents the house, lawn, walk, flowers and shrubs from being littered up and ruined with coal dust and stray lumps. It minimizes depreciation on your home. When the chute is not in use for coal, a glass door serves as a window, giving splendid light to the basement.

Locks from the inside and is absolutely burglar proof

It is extra durable, has a heavy steel body—semi-steel door frame and boiler plate hopper. It will last as long as the building. Arrange for one when you build, or can be used in place of cellar window.

We make the Majestic in all types for houses, hotels, store and office buildings, apartments, etc. See them at hardware and building material dealers.

Architects and Builders Write for Catalog of
Majestic Specialties—See Sweet's Catalog

The MAJESTIC CO., 610 Erie St., Huntington, Ind.

Manufacturers of Coal Chutes, Garbage Receivers, Milk and Package Receivers. All Metal Basement Windows, Rubbish Burners, Street and Park Refuse Cans, Metal Plant Boxes, Hose Reels, Pipe and Pipeless Warm Air Furnaces, etc.

CANTON Sidewalk Doors

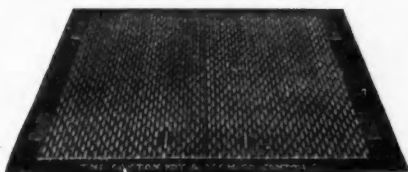
Prevent Accidents

There are no projections of any kind on which to trip or stumble; and the corrugated surface provides a firm foothold in all kinds of weather.

The frame of the Canton is cast in one solid piece, the top is reinforced diamond plate steel, and is unequalled for durability, appearance and safety. When open it has stay rods and chains to protect the opening. When shut the improved locking device makes it absolutely burglar-proof.

You can't buy a better door for a cheaper price. Write now for our catalogs, "B-17" of sidewalk doors, coal chutes, gratings and Builders' Iron Work.

Canton Foundry & Machine Co.
CANTON, OHIO



The Window Chute for Coal

It opens from inside which makes it burglar-proof. No catch, screw or bolt to make it possible to be opened from outside.

The door is fitted air and water tight.

The simplest design made. Sizes 15" x 20" and 18" x 20".

Send for Catalog and Prices

**The Ravenna Furnace
and Heating Co.**
RAVENNA, OHIO



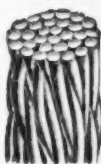
Carpenters, Builders, Attention!

You owe it to yourself, as well as to the property owner for whom you are working, to see that his buildings are adequately equipped with proper protection from loss by lightning.

His confidence in your judgment will make it easy for you to secure this additional work.

The Barnett System of Guaranteed Lightning Protection

Is the easy way to more profits on the same job. Our rods are in big demand and there is a big profit in selling them. They are made of pure copper cable, with attractive fixtures that are easily put on any building.



Why not equip yourself to take advantage of the opportunities for this work which are continuously arising? Let us show you the way to more profits on the same job.

**FREE -- Cable Samples, Price List
and Catalog. Write for them today.**

JOS. A. C. BARNETT & CO.
RIVERSIDE, IOWA

All Doors Look Alike to the "Glide"

One of the best tests of a door hanger and track is the weight that it will handle. Equipment that is successful on large and heavy doors has a fine testimonial of its efficiency and strength. If a hanger and track carries such a door, it certainly will have no trouble with a smaller one.

One pair of "Glide" hangers and track are supporting the

door shown in this illustration. This door is in a large lumber shed and is wide enough so that cars can go thru. There are 500 feet of lumber in the door and it is 24 feet high and 16 feet wide. Its weight is 1,370 pounds. The owners of this lumber shed say that they tried for twelve years to find a hanger that would support the door but had never been successful until they tried the "Glide" hanger.

There is also another instance of the capacity of hangers.

In Connecticut there is a door 17 feet high and 20 feet wide that weighs 1,680 pounds. It is being carried by one pair of "Glide" hangers and the owner says it runs very easily and has given the greatest satisfaction.

The makers, Frantz Mfg. Co., Sterling, Ill., say that "Glide" equipment carries the door up close to the building and that the door is coupled up close to the track. This prevents any water from dripping on the top of the door. The track also forms a perfect water shed over the top of the door. No lateral adjustment is necessary to get the door in close because the hanger is fastened inside the door instead of outside. All that is necessary is to use bolts of the right length and the hanger does the rest. This eliminates blocking the door in position.

The Frantz Mfg. Co. have a very attractive catalog showing details of all their styles of door hangers and also the various other kinds of building hardware that they handle. Copies will be sent to our readers on request.



Asbestos Shingles Gain Favor

Architects and builders are today turning to the asbestos shingle as the roofing material which offers a great factor of safety from fire danger.

The Transite Asbestos Shingle made by H. W. Johns-Manville Company is a neat and attractive-looking combination of Portland cement with tough-fibred asbestos, both materials are proof against fire or weather conditions, however serious.

Altho strong, it is light in weight and does not require special roof timbering nor does it demand any skill beyond that of the ordinary carpenter to lay an asbestos shingle roof, the operation being, as a matter of fact, almost similar to the laying of the wood shingle.

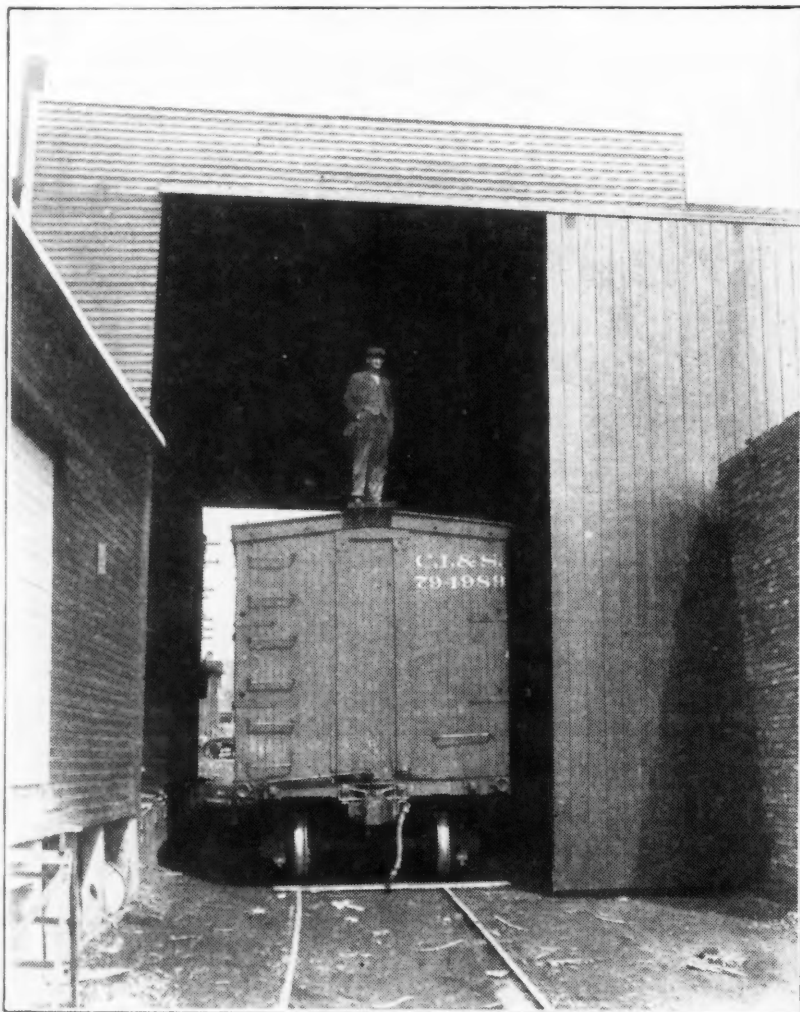
But the best thing about it is the fact that *it won't burn, can't burn*, and will protect the house it covers from burning, as far as any roof can.

Brands and sparks have about as much effect as they would on a stone sidewalk. They don't even mar the surface of the asbestos shingle, neither can the heat penetrate to the woodwork below.



Vibration of Structures

The Aberthaw Construction Co., of Boston, Mass., is undertaking an exhaustive investigation regarding effect of vibration of structures. They will greatly appreciate any suggestion or reports of experience that our readers may be able to send them. These may have to do with any aspect of the case.



This 1,370-Pound Door is Being Carried Satisfactorily by One Pair of "Glide" Hangers and Track.



Easy to own this good engine

Send for my new money-saving offer, before you arrange to try any engine for any price. Compare my engine with any other; consider my low prices—(easy terms if you wish), and you will see your advantage in having one of my

BAUER ENGINES

Gasoline, Kerosene, Distillate and Gas
 Sizes, 2, 3, 5, 7, 9, 12 and 16 horse-power. Now sold only direct from my own factory at surprisingly low prices. All sizes, up-to-date, long stroke, valves-in-head, even speed type of engine. Over 20 years ago I made my first engine with my own hands. The thousands of my engines now at work prove that you take no risk when you get a **Bauer Engine**.

Write for Free Book Send me your address now, so I can send you my free book, with my latest and most liberal offer.

A. F. BAUER ENGINE CO.,
 226 Bauer Bldg. Kansas City, Mo.



**5-Year
Guarantee**
Direct From Factory
to User

Good Profits \$1200 IN COLD CASH

- an Easy Job

**Setting Up
Kalamazoo
Pipeless
(One Register)
Furnaces**



- and You Give Your Customer Furnace Comfort at Retail Stove Cost

MAKE a big extra income setting up this popular type of furnace. Fits any home, new or old. Solves the heating plant problem—as easy to set up as a big stove—no pipes to fit except smoke pipes. This type of furnace is becoming the big leader over all other heating plants. Low in cost—simple—efficient—every home wants it—write for details.

If Your Customer Wants Pipe Furnace We Draw Up Plans FREE

Send us floor plans of his home and we will make up heating plans for installing and submit free—with estimate. We make shipments within 24 hours—pay freight—allow one year approval test—cash or easy payments, \$100,000 guaranty.

Write for Furnace Catalog No. 947 and get our proposition for contractors and builders.

KALAMAZOO STOVE CO.
Mfrs., Kalamazoo, Mich.

300,000 families using Kalamazoo Stoves, Ranges, Gas Stoves, Furnaces, White Enamel Metal Kitchen Cabinets and Tables.

A Kalamazoo
Trade Mark
Registered
Direct to You



35 cents a day buys the Simplex Junior Mixer

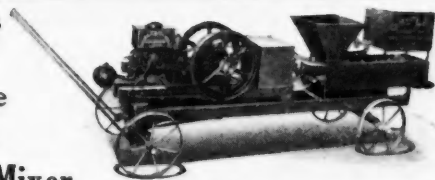
The most economical continuous Mixer on the market to operate. The mixing blades are built on an entirely new principle—split materials like a hoe. Twenty-one blades move the materials forward, while seven blades reverse, giving twice the mixing obtained by any other mixer.

And the Simplex will successfully mix mortar as well as cement. A labor saver on every job.

\$98.50 complete, mounted on trucks with engine **\$46.50** on skids without engine

WESTERN MFG. CO. OSKALOOSA, IOWA

We manufacture all types of Mixers, also Culvert Forms



The "U. S. Standard" Cement Block Machine

The first block machine to use the oval method of coring—the method which furnishes numerous supports or cross bonds in a hollow block that binds its sides together, and keeps it from collapsing.

And it's two machines in one. Makes hollow or outside blocks; and makes thin blocks for veneering the outside of a building or for inside partition walls. Simple to operate, and rapid in output, the "U. S. Standard" stands first among medium-priced block machines.

Write for our catalog E on "U. S. Standard" Block Machines and Mixers

U. S. Standard Mfg. Co.
ASHLAND, OHIO



Made in Two Sizes
16" and 24"

in 30 days, by **STONEMAN**—\$1500.00 To Date

This offer is open to you—this money—the cold cash—can be yours. You and you alone by waiting too long can lose it. Investigate today—get the proof, send your name and address—but NO MONEY—this very minute.

\$1000.00 PER MAN PER COUNTY

Experience unnecessary—business supplies the capital. Payments start the first day—and continue daily up to \$1000.00 per month, per county. For years we have been quietly picking men from all walks of life, carpenters, ministers, clerks, farmers, doctors, lawyers, teachers and so on—enabling them with our help and \$50,000.00 appropriation to get what we here offer for you—\$1000.00 per man, per county. Some of these men you may have envied without knowing the reason of their prosperity.

INVESTIGATE AND BE AMAZED

Demand absolute proof—accept no other kind. Either we have the best thing that ever happened or we're colossal liars. Ask Schleicher, minister, whether it's true that he received

\$195.00 TWELVE HOURS AFTER APPOINTMENT:

Langley, liveryman, \$115 first day; Rasp, agent, \$1685 in 73 days; Beem, solicitor, \$164.25 weekly for 12 weeks; Korstad, farmer, \$2212 in a few weeks; Zimmerman, farmer, \$3856 in 30 days; Juell, clerk, \$6800; Hart, farmer, \$5000; Wilson, cashier, \$3000 in 30 days. Let us refer you to those men, to the U. S. government, to banks, business houses, noted people. Heed this caution from Chas. Starr, of Mich. "Sorry this field is closed. Should have acted sooner but was skeptical. Your local man's great success has set everybody talking and proves I was a chump. Wonderful what a man can do with a real opportunity." Then read this from Lodewick who acted quickly: "Lucky I answered ad. It's great. Money coming fast." Which will you be. Starr, a victim of "neglected opportunities" or Lodewick, the early bird? Avoid regret, send a postal this very minute.

SPEND 1 CENT TO MAKE THOUSANDS Strange invention startles world. Gives every home that long-desired blessing, a modern bathroom with hot and cold running water facilities for only \$6.50. No plumbing—no water works—self-heating. Only ten minutes to install. Gives cleansing plus friction, massage and shower baths in every room. Equivalent to any \$200 bathroom. Over 200,000 delighted users. Used by U. S. government.

More remarkable than this invention is our startling plan of universal distribution through special representatives who virtually become profit sharing partners in a business that's immense—exciting—dignified—and above all, has enabled them, will enable you, to get \$1000.00 per month, per county. Asking to be shown doesn't obligate you one bit. Investigate today by all means.

ALLEN MANUFACTURING CO., 110 ALLEN BLDG., TOLEDO, O.



THIS MACHINE WILL EARN \$20 to \$50 Daily Profit for You

Making Cement Bricks and Blocks

Factory owners are the biggest money makers in America and this machine will place you in their ranks. You can start with little capital and even without experience. This machine makes pressed cement bricks and blocks under 80,000 pounds pressure. No tamping and easy work. It makes 1,000 blocks or 10,000 bricks daily. No burning required. Ready for the market in a few days' time. They are necessary for the



Helm DRY WALL Building System

This is the system that appeals to builders, contractors and architects. It overcomes the opposition to concrete because it offers absolutely **DRY WALL** construction. It saves money for builders, as **no furring and lathing are required**, and it makes **rigid walls and fireproof walls**. This is the system which is bound to get you business and give you the advantage over all other products. **\$50 and up starts you.**



Send for This FREE CONCRETE BOOK

Tear off the corner coupon right now before you turn the page. Let this free book tell you all about this great opportunity which is open to you today. It will tell you all the details of this system, about the Helm Press and the DRY WALL building system. It will show you how easy it is to start a profitable business. It tells how each product is made, how it is cured and sold. Write today. Do it now.

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272 Mitchell St.
CADILLAC, MICH.

**Helm Brick
Machine Co.**
272 Mitchell St.,
Cadillac, Mich.

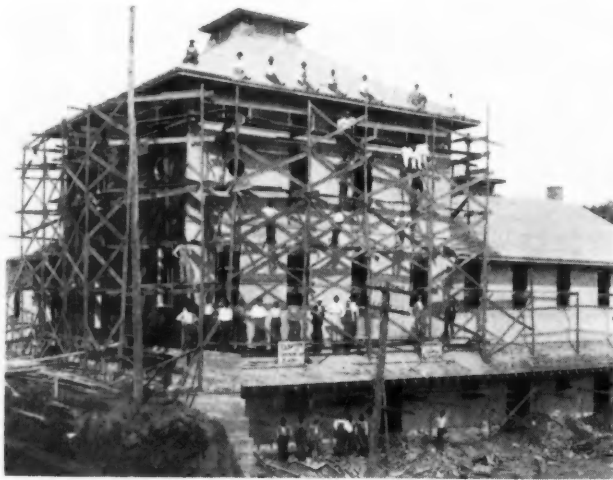
Please send FREE the book on concrete and Helm Presses.

Name.....

Address.....

Warehouse of Bishopric Stucco Board

This warehouse was recently erected at Winston-Salem, N. C., for The Farmers' Co-operative Association. The photograph was taken during the finishing of the exteriors,



Warehouse Built for Farmers' Co-operative Association at Winston-Salem, N. C. Exterior of Stucco on Bishopric Stucco Board.

for all of which Bishopric Stucco Board was used. The architects, Humphreys & Faw, of Winston-Salem, chose this background for stucco work because it combines exceptional beauty of finish, rigidity and permanency with economy in construction cost. The contractor is T. A. Butner, of the same city.

The photograph shows the finished stucco work, as well as the Bishopric Board before the stucco is applied. No metal is used in this type of wall construction. It is moisture

and vermin proof and the stucco does not crack or break away from its background, to which it is firmly and permanently held by the dovetailed interlocking of lath and stucco work.

The Bishopric Board used for background is made of lath dovetailed and imbedded in asphalt mastic on a layer of heavy fibre-board, a combination of materials possessing the highest degree of wearing qualities, and which cannot be penetrated by sound, heat or cold. The lath is creosoted, making it proof against swelling, shrinking or rotting.

Bishopric Board is made by The Mastic Wall Board & Roofing Co., of Cincinnati. It comes in 25-foot lengths, four feet in width, and has been used with the greatest success in many types of structures. Leading architects specify it because the severest tests have shown it to be both lasting and weather-proof, keeping the house warm in winter, cool in summer, and always resisting dampness.



Favorite Farm Level

Methods of doing any kind of work by guess are being eliminated to a large extent at this age of the world. Mechanical improvements of all kinds and the decreased cost of obtaining different machines has made it possible for every one to do many things accurately by means of mechanical devices of all kinds.

The accompanying level shows one of these types of improvements that makes it possible to get accurate levels at a low cost. Anyone who has to do rough leveling or lay out tracts of land will find this instrument mighty valuable at all times.

The telescope is 10 inches long and shows the objects erect. The horizontal circle reads from 0 to 360 degrees. The makers say that it is very easily handled and the book of

(Continued to page 230)

The Excelsior Printing Company

712 Federal Street

Chicago

Print This Magazine

We have special facilities for

Catalog Printing

Please let us hear from you. We might be able to give you better work at lower prices than you obtain locally.



Uncle Si Says:—

**"Simonds Saws
were made to cut,
not to
develop biceps"**



A Popular Model

No. 62 Simonds Blue Ribbon Saw \$2.50

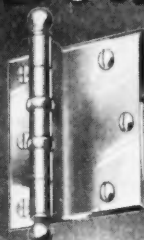
And furthermore they stay sharp. The steel in a Simonds is made in our own steel plant, so as to get the best and toughest steel possible. Every tooth is as sharp as a needle, and will do a great deal of cutting before it needs filing. We have made cutting edge tools for eighty-four years and our trade-mark is a guarantee of Quality, Temper and Workmanship. "You can't own a Simonds Saw and be dissatisfied."

Simonds Manufacturing Co.

"The Saw Makers"

Fitchburg, Mass.

Stanley Surface Butts for Metal Doors

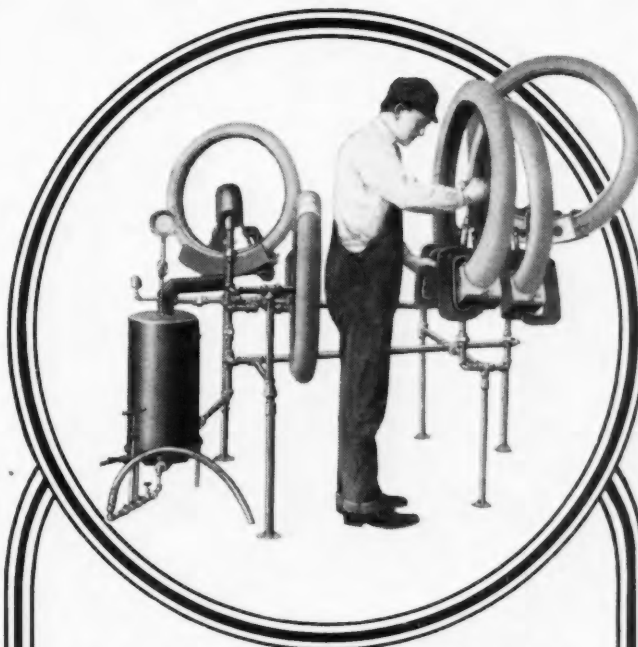


No. BB170

Holes accurately drilled to Template to insure perfect fit.
Reversible. Beveled edges and joints. Equipped with ball bearings and non-rising pins.
Write for full information regarding styles, sizes, finishes, etc.

To Dept. "A"

MADE BY THE
STANLEY S.W. WORKS
NEW BRITAIN CONNECTICUT
NEW YORK CHICAGO



MAKE THIS YOUR BUSINESS AT \$3,000 PER YEAR

Repairing and Retreading Automobile Tires. There isn't a business you could get into that offers such sure possibilities of **success and fortune.** One man and a Haywood Tire Repair Plant can **make \$250 a month and more.** Scores already have done it and this year there is a greater demand than ever for tire repair work.

"15 Million Tires to Repair"

That's not a myth nor some man's dream. It's an actual fact. Tire factories everywhere are building new buildings—enlarging their plants for the biggest period of prosperity in the automobile business. **15 million tires will be manufactured and every one will need repairing.** Why not cash in on this opportunity? Start in the business while it is yet young. A business that's growing and getting bigger and better. As it grows it will make big money for you.

No Experience Necessary

No previous training, no apprenticeship, is required to enter this business—not even the faintest knowledge of tires. If you have a little mechanical turn of mind, you can quickly become an expert. We teach everything. **You learn in a week.** Handle all kinds of jobs—figure prices at big cash profits. Nothing is easier to master completely.

A Rich Opportunity for Carpenters

Awaits ambitious men everywhere. No city too large—no town too small—everywhere the same opportunity exists. **A moderate investment** starts you. Get one machine and build the business from there. Business comes easy. We show how to get it. You grow and grow. You're soon a **real manufacturer—a success—a mighty big factor** in your community.

Write for the Facts

INVESTIGATE. Send the coupon below, a letter or postal. This brings full information—and a big interesting catalog. Tells all about tires and how to repair them. Shows how to make money—to become independent. Do this today—NOW—before you forget it.

HAYWOOD TIRE AND EQUIPMENT CO.
660 CAPITOL AVE. INDIANAPOLIS, IND.

FREE CATALOG COUPON

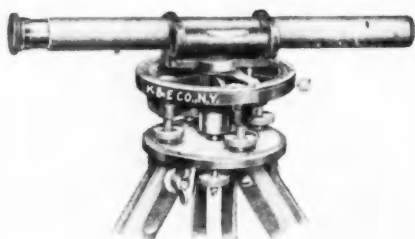
Haywood Tire and Equipment Co.
660 Capitol Ave., Indianapolis, Ind.

Gentlemen:

Please send me your catalog, details and plans for starting ambitious men in the tire repair business.

Name

Address



The Favorite Farm Level.

wanted but very accurate work is not generally required.

The details of the prices and construction of this instrument can be obtained from the makers, the Keuffel & Esser Co., Hoboken, N. J. This instrument will be mighty valuable to the man that is handling work on the farm.



The Dry Air Circulation System

The air circulation and the insulation of a refrigerator are the two factors which most determine its efficiency. The insulation cuts down the amount of ice that is needed and makes it possible to keep the inside of the refrigerator cool. The air circulation operates to keep the temperature the same in all parts of the refrigerator and keeps the air pure and dry so that nothing will spoil.

As a test of the dry air circulating qualities of Herrick refrigerators, the makers suggest that a damp cloth or paper be suspended from a shelf or a wet soda cracker be placed on a shelf. They say that it will dry in from three to five hours when the refrigerator is iced and running. The air is carried down thru the compartment below the ice, under the solid partition and then up the other side and over the partition to the ice again.

directions sent with it makes it possible for any one to do the ordinary work required for the builder. It is intended particularly for work on the farm, where good results are

The walls are very carefully insulated with mineral wool, which makes it possible to reduce the ice consumption to a large degree.

The illustration is of an outside iced refrigerator made by the Herrick Refrigerator Co., Waterloo, Ia. This type is made in the same way as



Provide a "Herrick" and Keep the Ice Man on the Outside.

their other styles, and has the advantage of having the ice put in from the back porch or an outside landing.

Particulars as to the many styles and prices of their refrigerators can be secured from their catalog, which will be sent on request.



Chemical Closets for Rural Communities

The problem of supplying indoor toilets for homes or buildings outside the sewer districts is one that is of vital importance to the carpenter or contractor. During the past two years an entirely new principle of sewage disposal has come into use, known as the chemical closet.

One style of chemical closet, known as the vault system, makes a permanent installation, answering every purpose and

(Continued to page 232.)

Plenty of Work This Winter—
If You Own a

BERLIN

Portable Woodworking Mill

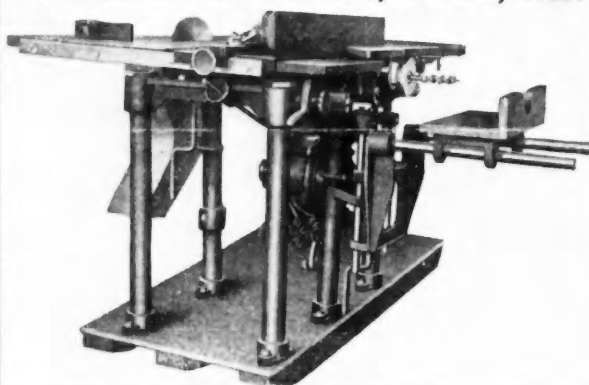
A man with this valuable piece of equipment can do any number of things during the slack season. He can make all sorts of interior improvements—such as built-in side-boards, medicine cabinets, stair work and cabinet work. He can also be getting ready for next year—making sash and doors, exterior and interior trim, etc. Many Builders have paid for this machine and made a handsome profit, too, during the winter season.

A Machine for all Purposes

The BERLIN heavy duty Portable Saw Rig consists of a Rip Saw, Cross Cut Saw, Dado Saw, Grooving Machine, Jointer, Jig Saw, Boring Machine, Sander and Emery Wheel. It comes equipped with either a gasoline engine or electric motor mounted on its own base. It is easily moved from job to job and is strong and rigid. Guaranteed for two years.

Write for Details and Full Information Today

SCHAEFER MFG. CO., Berlin, Wis.



Make Perfect Stucco

and make more money doing it with the Automatic Stucco Machine.

The Automatic Stucco Machine

applies Cement, Plaster or Stucco in an even uniform coat, that will be stronger and far superior to hand work. The Automatic Stucco Machine enables you to give your customer a Durable, Artistic Finish at the price of a good painting job. You can make big money doing remodeling and refinishing work with this machine.

Special Introductory Offer

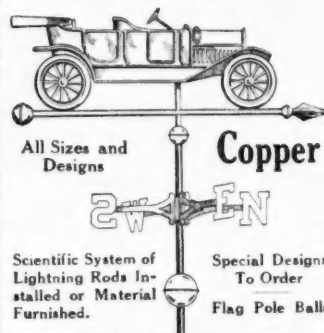
For a limited time, to introduce to builders, we will sell this machine at a discount of 33 1/3% from regular price. Write for further particulars and free booklet.

Automatic Stucco Machine Co.

51 E. 42d St., New York City, N. Y.

Weather Vanes

Send for Our
New Catalog



All Sizes and
Designs

Copper

Scientific System of
Lightning Rods In-
stalled or Material
Furnished.

Special Designs
To Order

Flag Pole Balls

Every builder should have a copy of this catalog. It is the first complete catalog on this subject ever issued. Shows all vanes in gold. Write for your copy today.

We Protect the Builder

E. G. WASHBURN & CO. 210 Fulton Street, New York



No. 44-B

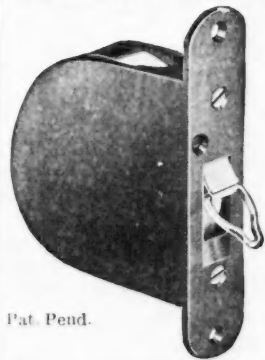
A New Adze

WE have been requested by so many carpenters to make this Adze, that we decided to do so. It is a lighter Adze, thinner metal at the eye, shorter from the eye to the cutting edge and has the usual correct White hang and quality. Same price as our regular.

Ask Your Dealer to Get a Sample to Show You.

The L. & I. White Co., Columbia St.,
Buffalo, N. Y.

Caldwell Sash Balances Uniform Mortises



Pat. Pend.

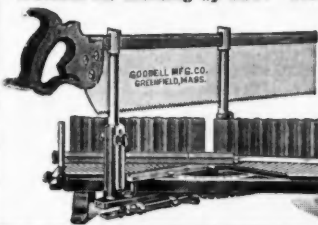
For use in all classes of new work. Box frames unnecessary. Mortises cut at mill reduces cost of installing. Counterbalance sashes perfectly unaffected by atmospheric conditions. Cheapest method for modernizing old window, as alterations in sashes and frames are not necessary. Sashes should be weighed before ordering.

Write for Circular
CALDWELL MFG. CO.
2 Jones St. Rochester, N. Y.

No Cast Iron Here

This Mitre Box is All Steel. Not an ounce of Cast Iron in it. What's its name? Why, the **Goodell**, of course.

Steel Truss Frame or Bed, Cold Rolled Steel Corrugated Back. Wrought Steel Lever or Saw Support. Automatic Detents for Holding up Saw. Steel Bottom Plates with Angular Serratures. Long Saw Guides, and Many Other Features.



Write for new Circular
"C" describing

The Box that
cannot break
Goodell Mfg. Co.
Greenfield, Mass.



Ankor Bolts



Hold Bathroom and other Fixtures in Glazed and Hollow Tile.

HERE are time-tried facts that affect every builder intimately:

- (1) With Ankyra Bolts any kind of fixture can be attached easily to walls or ceilings of glazed or hollow tile, lath-and-plaster, concrete, compo-board and expanded sheet metal,—
- (2) With definite assurance that the job is absolutely permanent and never loosening,—
- (3) That *any* part of any such wall may be chosen,—
- (4) Without sounding for studding or other reinforcement,—
- (5) Without injuring the wall in any way,—
- (6) With the ability to remove or replace the fixture any number of times at will,—
- (7) And without disturbing in any way the permanent fit of the Ankyra Bolt in the wall.
- (8) A number of the smallest and biggest buildings in the country are equipped with Ankyra Ankor Bolts.
- (9) And Ankyra has the endorsement of architects, builders, plumbers, and steam fitters, as shown by re-specification and repeat orders.

We will gladly send you full information and sample Ankyra Bolts, that you may see for yourself how intimately Ankyra Bolts affect your business.

Write today. No obligation,
of course.

Ankyra Mfg. Co.

151 Berkley Street
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Philadelphia

convenience of the water closet and operated at approximately the same cost.

The bowl is of the hopper type of special shape, having a 12-inch opening at the bottom. A large steel vault is placed directly beneath the bowl, either in the cellar or below the floor. The bowl is connected to the vault by a large pipe, 12

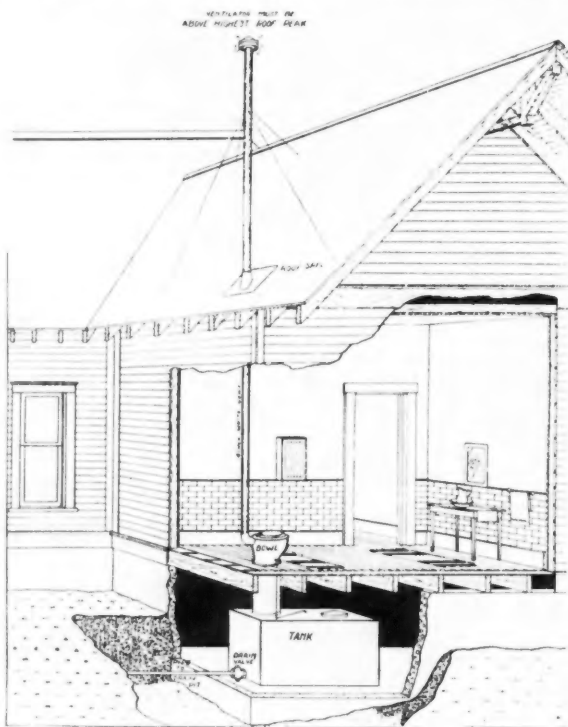
to 14 inches in diameter, thru which the sewage passes directly into the vault. This receptacle contains a strong chemical which completely liquefies and sterilizes the sewage and decomposes the paper. The entire charge of chemical is put into the tank at one time, being first dissolved in three or four pails of water. The tank is emptied about twice a year by simply turning a stop cock, and the contents are run into a tile drain. After emptying, a new charge of chemical is put in and the outfit will run without attention for the next six months.

In most instances the tank is placed in the cellar, from which point connections are made with the drain. In cases where there is no cellar the tank may be installed either beneath the floor or under the porch. In the latter connection a drain pit should be dug and filled with stone or rubbish, but under no conditions should the location of this pit be less than 100 feet from any well.

Where no tile drain is available, or where the close proximity of wells or neighboring dwellings prevent the use of drain pipes, a pumping system may be installed by which the sewage can be pumped into pails or barrels, and if desired, used for fertilizer. For large schools or public buildings a force pump and tank installed on a wagon may be brought into service for pumping the sewage directly into the wagon for subsequent disposal.

It is also very important that chemical closets should have an efficient ventilating system, with connection either to the chimney or thru the roof, the flue being not less than 4 inches in diameter.

The accompanying illustration is reproduced thru the courtesy of the Dail Steel Products Co., Lansing, Mich., manufacturers of the Wolverine chemical closet and the Wolverine multiple system for schools, churches and public buildings. They show a typical cellar installation for residence purposes.



Typical Installation of Wolverine Chemical Closet

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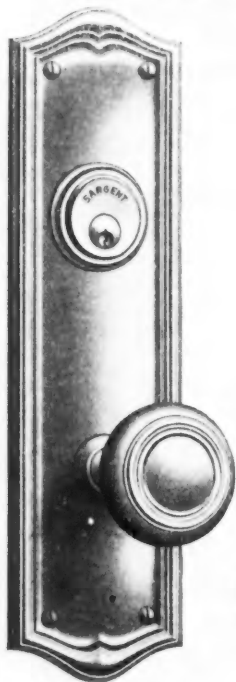
Sargent Designs are made in variety to please all tastes.

A great convenience is the Sargent master-key system by which all exterior doors of the house, barn, garage and other buildings can be equipped with Sargent Cylinder Locks (or Padlocks where desired), each of which has its own key but all of which may be operated by a master-key that is used by the owner, who in this way is relieved of the necessity of carrying a number of keys.

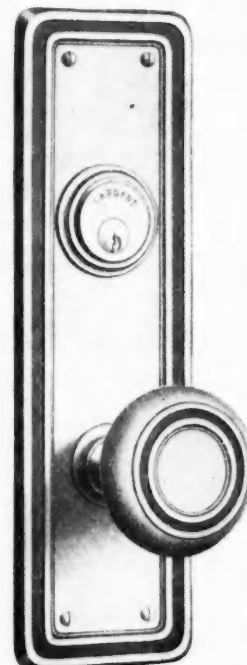
The Sargent Book of Designs, free on request, offers many suggestions to home builders.

Sargent & Company

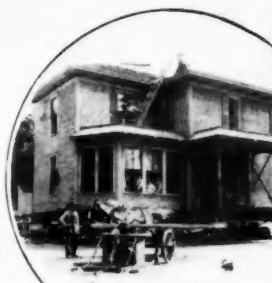
51 Water Street, New Haven, Conn.



TH-Hudson Design



SW-Winslow Design



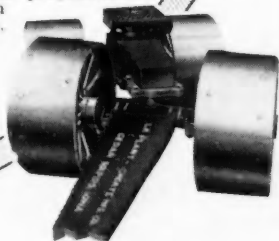
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BIGGER profits are made every day by moving buildings to cheaper lots and selling them instead of wrecking them. When you wreck a building you get very little out of it that will bring you any money. Buildings that are moved, remodeled a bit, bring a good price and big profits. Customers are easy to get who will buy them. House-moving is made easy with

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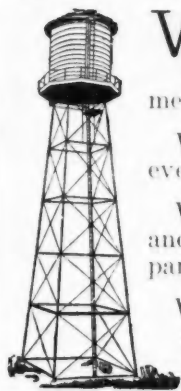
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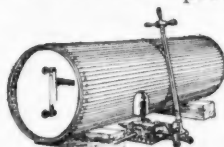


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The "**MASTER BUILDER**" Line embraces all varieties of hammers from the Upholsterer's pattern to the Cooper's four-and-a-half-pounder; every variety of hatchet and hand ax. They are known the world over and every one of them will give you a lifetime of the sturdiest sort of service.

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Philadelphia, Pa.

Branch: 62 East Lake Street, CHICAGO

New Offices for Oak Flooring Bureau

The Oak Flooring Bureau have announced that they have moved their offices from Detroit to Chicago, Ill., and are now located at 1358 Conway Building. All correspondence should be addressed to their new office.

They have a booklet called the Oak Flooring Booklet that they are sending out to all those interested. A card with your name and address will bring a copy. It tells all that is worth knowing about oak flooring.



Keeping Busy the Year Around

To jump from carpenter work to tire repairing might seem quite unusual to most readers of the AMERICAN CARPENTER AND BUILDER, but nevertheless there is an opportunity to keep busy and make money the year around and there isn't any reason why carpenters should not avail themselves of the opportunity. Most carpenters have a small shop which is idle especially during the winter months. That shop can be the start of a big paying business and this business is automobile tire repairing.

An eminent automobile authority estimates that 1,000,000 automobiles a year will be demanded for the next three years. There is one industry whose wave of prosperity will wash up further than any other during this tide of automobile prosperity. This is the automobile tire industry. Every auto made, means four new tires. The demand for one million autos means four million tires.

Tires are acknowledged the least durable part on the auto. They are a constant source of upkeep expenditure and any opportunity to save tires is eagerly grasped by every auto owner.

But as important as tire repairing is, it is of no more importance than the machine by which this work can be done.



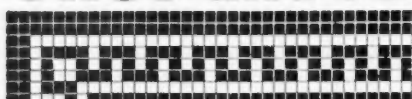
Carpenter's Set for Vulcanizing Tires of all Kinds.

Machines are made now, simple in construction, simple to operate, by which any man with a slight mechanical turn of mind can repair auto tires.

The Haywood Tire and Equipment Co., 696 Capitol Ave., Indianapolis, Ind., specialize on a machine of this kind. They make the complete plant which will do all of the work and do it well.

To carpenters especially the automobile tire repair business, either as a business by itself or as a side line to their regular work, would prove valuable. The company furnish plenty of assistance in helping anyone who purchases their machines to get business.

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